JULY 21, 1952 NEWS ISSUE

Electrical World

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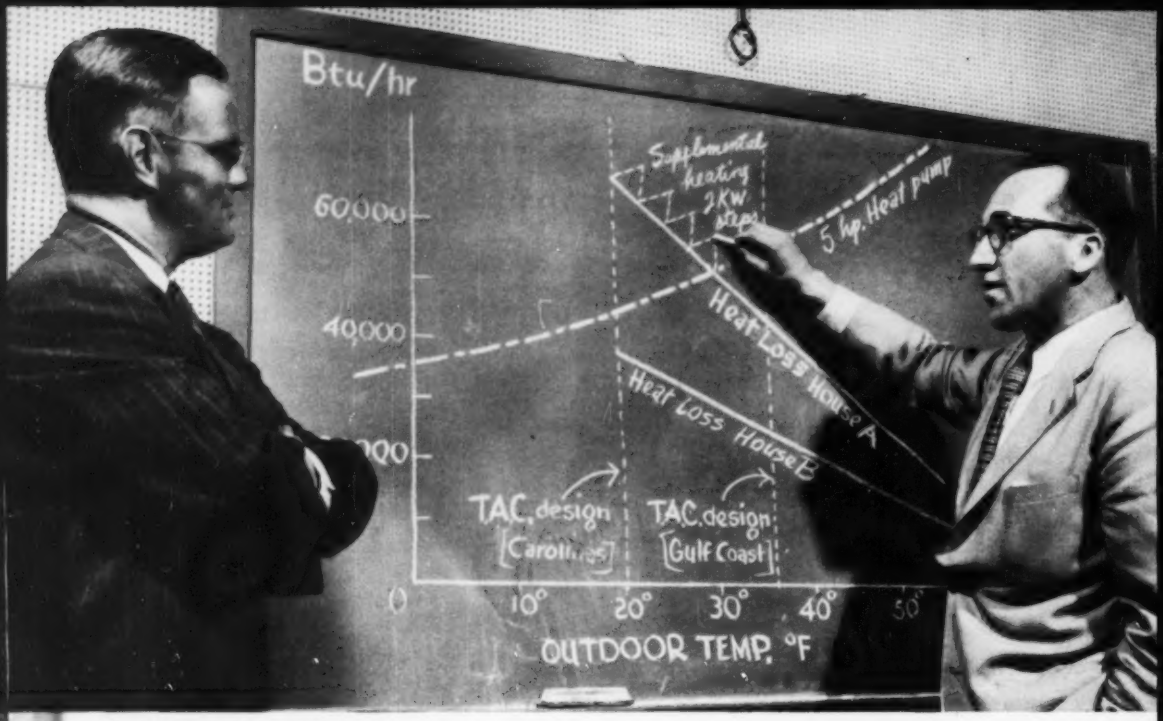
John E. Corette, Jr, new head man at Montana Power . . . Page 29

How to Live Better on a Farm . . . Page 16

Steel Strike Alters Business Picture . . . Page 50



Need for supplementary heating under some circumstances is one of the most discussed heat pump operating problems. Paul O'Neill, Commercial Engineer, G-E Heat Pump Dept., shows Harold Campbell, G-E Distribution Engineer, how this is influenced by heat loss of the individual house, outdoor temperature and design capacity of the unit. Further details are given in Manual AM-25-2141, obtainable from Air Conditioning Dept., Bloomfield, N. J.

What's happening with the HEAT PUMP?

Limited production is already under way. Here's a progress report and a prediction for the future, based on G-E experience.

The growing demand for air conditioning and an increasing need for balancing rising seasonal load peaks will be one of the biggest factors affecting future heat pump development. That's the conclusion drawn from intensive General Electric study and experience with the electrical industry's newest and most promising major appliance.

With limited assembly line production under way, G-E marketing policy has been aimed at co-operation with utilities in areas where heat pump characteristics will benefit system operation.

Marketing has been largely pinpointed in the South. With air conditioning creating summer peaks, several utilities have found that year-round operation of the heat pump offers a valuable opportunity for adding substantial winter power consumption and smoothing out the annual load curve. Under such conditions, limited supplemental resistance heating, required in some cases, is not a problem.

The demand for air conditioning will continue to spread and with it will come conditions more and more favorable to heat pump application. General Electric Company, Schenectady 5, N. Y. 301-200

Limited assembly line production of 3-hp and 5-hp models has been in progress for months at G-E Air Conditioning Dept., Bloomfield, N. J. Here is evidence of a growing demand and G-E confidence in the future.

Car-load shipment for Dallas is striking evidence of a successful marketing program launched in co-operation with Dallas Power & Light Co. Watching unloading are C. A. Tatum, Vice-President of the utility and J. B. Lowe, President, Texas Distributors, Inc.

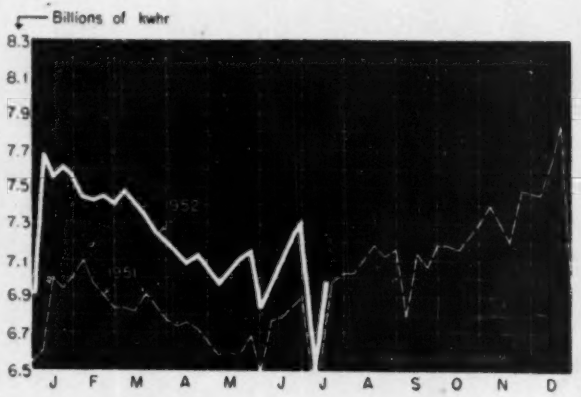
MORE POWER TO AMERICA

GENERAL ELECTRIC

VOLUME 138, NO. 3

July 21, 1952

Electrical World



Output Week Ended July 12—6,987,796,000 Kwhr

Per Cent Change From Previous Year

	Total U.S.	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
July 12	+3.7	+10.5	—0.2	—2.6	+5.3	+9.4	+13.6	+3.8	+3.9	+3.3
July 5	+6.7	+9.5	+2.5	+0.8	+10.1	+13.6	+18.6	+6.5	+7.1	+3.4
June 28	+6.1	+3.1	+1.7	—0.6	+10.0	+14.7	+18.9	+8.3	+6.1	+3.7

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Apr.	64.8*	66.5	60.4
Capacity (Million Kw)	May	77.01	76.74	71.35
Production (Billion Kwhr)	May	31.82	31.51	29.87
Hydro		9.69	9.96	8.54
Fuel		22.13	21.55	21.33
Fuel Consumption				
Coal (Million Tons)	May	8.01	8.05	7.99
Oil (Million Barrels)		3.72	4.20	4.51
Gas (Billion Cu Ft)		76.99	66.50	70.57
Sales (Billion Kwhr)	Apr.	28.33	29.03	26.68
Residential		7.91	8.32	7.12
Commercial		4.74	4.85	4.39
Industrial		13.85	13.98	13.17
Other		1.83	1.87	2.00
Net Income Class A & B Companies ($ Million)	May	68.24	75.82	60.80
Estimated Dec. 52 Peak (Million Kw)	Apr.	80.3	80.4	78.7
Kwhr per Residential Customer (12 Month Average)	Apr.	2,066	2,053	1,898
Revenue per Kwhr Residential Service (12 Month Average)	Apr.	2.79¢	2.79¢	2.85¢
Canadian Production (Billion Kwhr)	Apr.	5.03	5.22	4.90

Business Statistics

FRB Industrial Production Index†††	May	214	215	223
Gross National Product Annual Rate ($ Billion)	1stQtr.	339.0	334.6	319.5
E. W. 5 Industry Production Index	May	116.8	118.8	122.0
ENR Construction Cost Index††	July	119.6	117.8	113.7
BLS Consumer's Price Index	May	189.0	188.7	185.4
NEMA Insulation Materials, Sales Index†	Apr.	545	536	626
NEMA Electric Appliance Sales Index†	Apr.	221	278	326
NEMA Household Refrig. Sales Index†	Apr.	133	163	242

* Estimated. † 1936=100 †† 1949=100 ††† 1937-39=100 (Unadjusted)

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MORE POWER FOR PHARMACEUTICAL PRODUCTION

Three banks of Kuhlman Saf-T-Kuhl Transformers, like the one shown here, are contributing their share of work in ethical pharmaceutical production at Smith, Kline and French Laboratories of Philadelphia. This firm, one of the country's leading pharmaceutical manufacturers, uses Saf-T-Kuhls chiefly because of their safety and convenience of installation. Saf-T-Kuhls contain a 100% safe, inert, non-inflammable, non-explosive cooling fluid. This means that they can be installed anywhere without being enclosed in fireproof vaults. The 667 KVA Saf-T-Kuhls shown here are located on the sixth floor. They are used to feed air conditioning and heavy equipment. Ever since 1894 when Kuhlman pioneered in the transformer industry, the emphasis has been on quality workmanship and solid construction. You'll find Kuhlman Transformers serving electrical power and distribution needs throughout America and in foreign countries. The next time you need power, distribution, dry type, or specialty transformers, call the Kuhlman representative in your area. In the meantime, write directly to us for descriptive bulletins.

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THE ELECTRICAL WEEK

Featured in This Issue

When steel again comes from the mills, who is going to get it? Washington planners still aren't sure (p 7) . . . New tie line between Kansas City P&L and Union Electric Co will make it possible to "wheel" power between Missouri-Iowa and Georgia-Alabama (p 9) . . . When Quebec Hydro Commission found it advisable to expand its Beauharnois power project, its engineers had nine decisions to make. How they made them makes an interesting story (p 21) . . . Louisiana Power & Light makes good use of its company plane (p 32) . . . Because the steel strike has lasted so long, industrial production will lag in the fall months, rise sharply in 1953 (p 50).

• • •

Latest from Washington—NPA officials meet with steel industry men to plan orderly restoration of production and distribution of steel once the strike is ended . . . For whatever political platforms count, the Democrats will string along with a stronger public power plank than the Republicans have . . . Depa has extended the time in which utilities may file their allotment report (Form Depa-6) after receiving their materials for major plant additions . . . Consolidated Gas, Electric Light & Power of Baltimore has filed a complaint against its supplier, Pennsylvania Water & Power. Consolidated asks FPC to determine whether Penn Water is fully complying with the 1949 rate reduction order (EW, June 9, p 42) . . . Several industrial firms are nibbling at AEC's invitation to conduct studies on feasibility of turning atomic energy into electric power. These studies would be similar to those which have been conducted by four industrial-utility teams during the past year.

SEC swears in J. Howard Rossbach, New York City lawyer, as a member of SEC. He serves under a recess appointment, which is subject to Senate confirmation during the next session of Congress . . . Solomon Freedman is appointed assistant director, Division of Public Utilities, SEC . . . FPC reports preliminary net income of Class A and B electric utilities of $68.2 million for May versus $60.8 million a year ago.

From West South Central—Lower Rio Grande Authority directors instruct electrical engineer Ike B. Sigler to open negotiations on a tentative agreement with Central P&L for power transmission and purchase of excess hydroelectric power LRGA proposes to distribute from Falcon Dam (EW, Mar. 17, p 32). Sigler has estimated that plant can produce some 90 million kwhr yearly. He suggests a profit of $90,000 a year to LRGA if it can sell this power at 1-mill a kwhr profit.

From the Far West—A strike against Pacific G&E on or after Sept. 1 has been voted by more than 6,000 members of IBEW-AFL. System-wide strike was voted to back demands for a 20% hourly pay raise and improved pension plan. Local has rejected company's 4.6% pay raise offer. PG&E reports negotiations are continuing and strike announcement was a surprise to them.

Construction—Central Electric Power Cooperative, Chamois, Mo., begins structural work on plant to house first of four units of 15,000 kw each. Project is financed by REA . . . Alabama Power will spend $110 million in 1952, 1953 and 1954, Pres J. M. Barry says. "A look into the future indicates an enormous use of coal each year," he declares. "It is not any flight of fancy to suggest that 25 years from now Alabama Power alone will use about ten million tons of coal per year."

Foreign—Israel's electric rates have been increased by 45% for domestic customers. Industrial rates have been upped 40%, and electricity for irrigation purposes has been raised 25%. A move to make householders pay a deposit to cover the increased rates has aroused considerable criticism.

Legislation—Louisiana legislature passes new law which disqualifies employees who voluntarily leave jobs from receiving unemployment compensation until they have been re-employed and have earned ten times the weekly benefits they would have received if dismissed.

Rates—Otter Tail Power gets North Dakota PSC approval to increase rates by about 7.1%.

Public Relations—Some 40 representatives from eight states attended a preliminary organization meeting at Dallas for a Southwest regional group of PIP which has ten company members in the area. Next meeting will be in August at Oklahoma City.

Arkansas P&L files six big volumes with PSC in accordance with PSC's request to submit a report of company's expenditures (EW, July 7, p 42). Company reported having spent $564,375 for advertising during 28-month period from Jan. 1, 1950 to April 30, 1952. It also reported spending $270,429 for legal services, $720,408 for professional services, $156,125 for donations to charity, $86,464 for promotion and public relations. It also included a listing of all expenditures for materials and construction contracts in excess of $5,000.

Consolidated Edison starts pulling in first of two pipes to carry electric cable across the Narrows of New York harbor. Cables, each 6,700 ft long, are scheduled to be pulled through sometime in August. They will operate at 27 kv and possibly at 138 kv in future.

Hearings are going on before Iowa Gov William S. Beardsley's committee which is studying the advisability of recommending a PUC for Iowa.

Congratulations—Electrical Testing Laboratories, Inc, elects William F. Little vice president . . . Hotpoint Co names John F. McDaniel vice president and manager, marketing, and Harold A. Strickland vice president and manager, engineering . . . Tar Heel Electric Mem-

THE ELECTRICAL WEEK

CONTINUED

bership Association names William T. Crisp executive director.

More from Washington—Pacific P&L asks FPC for preliminary permits to investigate two new hydro sites on Lewis River in Oregon, with estimated potential of 85,000 kw.

Wisconsin PSC sets hearing July 29 on proposed sale of Nekoosa-Edwards L&P, Port Edwards, to Wisconsin P&L.

According to Department of Commerce's "Facts for Industry," electrical hp equivalent of air conditioning load totaled about 731,890 hp of which 515,002 hp was 30 hp and under, including 171,917 hp for room air conditioners for 1951. This compares with 712,994 hp, 529,625 hp, and 144,633 hp, respectively, for 1950.

IN THE INDUSTRY

Making a forecast of the industry for 2052-53 is easy. Any prediction, no matter how silly, will soon be forgotten and will cause no harm. But making a forecast for the remainder of 1952 and for 1953 is a tough job.

Probably in every utility system executives, statisticians, and estimators are hard at work revising forecasts made so confidently some eight months ago. They are seeking answers to such questions as these: How much will our construction schedule be delayed? How much will industrial sales decline? Will total sales be affected? Will net income go much below our previous estimates?

These and many other related questions are difficult. Industry planners have an outstanding record for accurate forecasting. But eight months ago who knew that the nation's greatest steel strike would take place this year. And that one strike has raised more problems for the industry than any event since World War II.

Steel a Basic Industry . . . Why should steel be so important? Only a few companies serve steel producers. The answer is that steel is one of the basic industries. When there is none, many other industries close their doors. Now is such a time.

These are the facts that those who plan for our industry must take into consideration. Since the beginning of June the steel industry has been operating at only 13% capacity. How much longer the mills will be idle no one knows. Some 13 million tons of steel have been lost because of three work stoppages this year. The total may reach 20 million tons, nearly 17% of the nation's annual potential.

Effects of the Strike . . . It is now known that the strike will have these effects:

1. The iron mines are idle. The ore boats lie at anchor in Great Lakes and coastal ports. The Great Lakes fleet cannot operate in winter; so ore must be stockpiled in summer. It hasn't been; so by spring the steel mills must again shut down.

2. Steel stocks of every important user will be exhausted before full steel shipments can be resumed. This means plants now closed will stay closed for weeks. As time goes on, more will close, and these two will be down for weeks.

3. As mills close, unemployment will rise and payrolls will decrease.

4. With less money, people will buy less of everything. Thus all other industries will be affected.

5. As other industries are affected, they too will close adding to unemployment and decreasing buying power still further.

6. As business declines and unemployment rises, the government's tax receipts will decline. This may retard reduction of taxes.

On practically every electric utility the strike will have these effects:

1. Industrial sales will decline.

2. Increase in residential sales will be slowed as customers cut down their purchases of appliances.

3. As the market for new homes is cut, fewer customers will be added. There will also be a delay in getting commercial customers on the line because buildings requiring structural steel will be delayed.

4. Revenues will decline and so will profits though not so much because industrial load is least profitable.

5. Utilities will use less fuel, thus reducing their expenses but also adding to unemployment and shutdowns in the fuel industries.

6. Power plants due on the line in 1953 and 1954 will be delayed as long as six months. This can cause trouble in the peak seasons of these years.

All these factors add up to an unpleasant time for those responsible for forecasting the future of their companies or the industry.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Irradiated iridium limits gamma rays more penetrating than X-rays, show flaws of a solid body on a fluorescent screen, and needs no power supply.

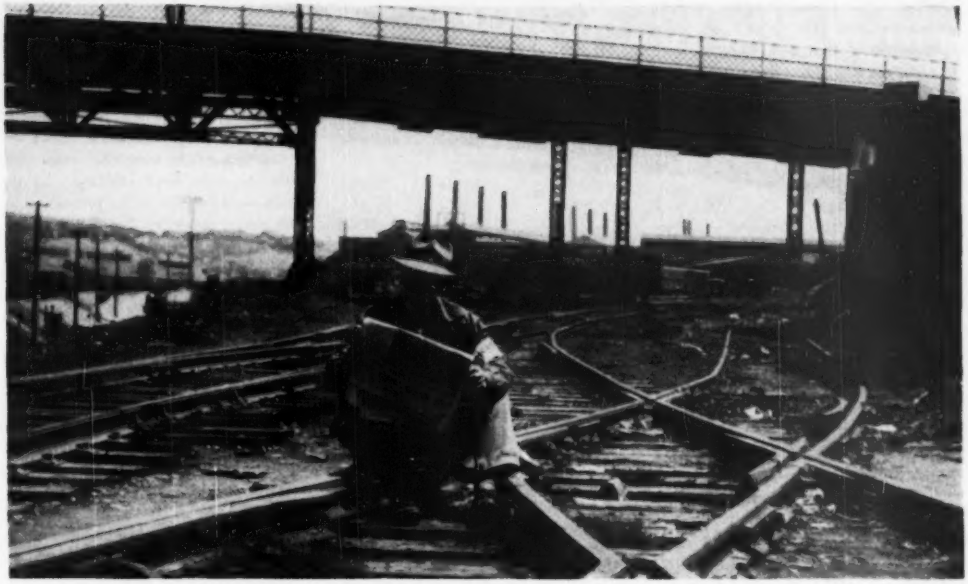
Permissible duration of faults should be reduced by faster relaying of the larger generators now being installed. Huskier trip coils may be the answer.

Dust collects in corners (housewife). Dust collects where velocities decrease or direction changes (combustion engineers).

Hydro turbines, contrary to steam turbines, increase in cost per horsepower. Unless offset by savings in other hydro plant components it may set a limit to bigness.

Reheat turbines will comprise 72% of the total rating on order with one manufacturer for delivery in 1953 for sizes larger than 20 Mw. Most will be for 1000 F.

Wire grooves in insulators had better be eyed from the angle of accommodating aluminum conductors where copper has been the habit.



Lone picket personifies idleness of nation's steel mills that means trouble because . . .

When Steel Comes, Who Gets It?

Washington material controllers do not know the answer but have three approaches. Meanwhile Electrical World surveys power companies and finds construction going on, sales dropping

Washington's production planners last week watched steel in the nation's supply lines drop like a rapidly falling barometer. And the indication is the same, rough weather ahead. Already the sky is clouded, and the clouds can be labeled unemployment, uncertainty, and politics.

Though when this was written the sun was trying to break through the clouds, no one was certain that it would succeed. No one would guarantee that the strike would end soon or indicate when the steel workers would go back to work.

Who Will Get the First Steel? . . . The planners still didn't know how steel would be allocated once production is resumed. These three approaches are being considered:

1. The Atomic Energy Commission and other direct defense projects will be allocated enough steel to permit continuation on schedule and to make up any strike-caused losses. Under this plan other industries, including electric power, would have to scramble for any steel available.

2. Defense-supporting industry, including electric power, would go in a second priority band just below direct defense projects. This would result in a sharp curtailment of operations by non-priority industries.

3. Let the steel losses be absorbed across the board. Theoretically this would mean that all construction and production would be set back the same amount. Defense and AEC projects would be set back with the rest.

DEPA Favors Approach 3 . . . Defense Electric Power Administration is on record as favoring the latter. It is felt that from the practical standpoint this would be the only long-range solution. To establish a procurement priority for the defense requirements would thoroughly disrupt other segments of the economy which must also contribute to defense production. To include the defense-supporting industries in this priority band or a slightly lower one would add to the confusion.

Further it is argued that to set up such priority bands would require a large and conflicting batch of directives that would mean huge losses in production.

Politics Enters . . . The third approach also has the most political appeal. The first two would almost certainly cause widespread dislocations in the civilian economy resulting in increased unemployment. Since the present Democratic administration is counting on present prosperity to continue the party in power, there will be a strong effort to keep unemployment and inconvenience at a minimum.

The only definite step taken by the material controllers is to hold up fourth quarter CMP steel allotments.

Quotas were announced for copper and aluminum (See table).

Admittedly this is a dubious way to meet the situation. But this appears to be the only immediate way open to the controllers.

Spokesmen for the control agencies directly responsible for the power expansion made these observations:

- Work stoppages in steel mills will not materially affect in-service schedules for power plants due on the line this year. But the strike with other complications may mean losses of some 3 million kw in next year's 11-million-kw expansion program.
- Probably because electric utilities and equipment manufacturers realize the control agencies can do nothing about the steel situation, they have received very little information on the effects of the strike on the industry.
- No electrical equipment manufacturing plant has yet been shut down by the strike. Schedule changes and plant-wide summer vacations may be a means of alleviating employment effects of the strike.

EW Makes Survey . . . So far a spot check by EW's editors and field staff indicates that the utilities have been faring quite well. There has been little slowdown in construction of plants scheduled for operation this year. Sales, in both dollars and kilowatt hours, have remained fairly high. The growth of air conditioning and increased use of television sets, during the Republican convention, have helped.

Here are what a number of companies willing to be quoted say:

Narragansett Electric Co—No construction affected. Industrial sales holding firm so far. Some manufacturers using distributors' stock steel shapes are beginning to feel the pinch.

New England Electric System—No construction trouble. Little slump in power sales except in the Worcester area where many metal-working plants are located.

Boston Edison Co—Edgar Plant construction going well because of advance steel deliveries. Duration of the strike will determine future. So far all equipment but power transformers has been delivered as scheduled. Company has no heavy steel producing or using customers.

Copper and Aluminum

Metal	Fourth Quarter Allotment	Third Quarter Allotment
	(thousands of pounds)	
Defense Electric Power Administration		
copper	55,597	64,750
aluminum	50,000	59,800
Electrical Equipment Division of NPA		
copper	163,328	159,203
aluminum	34,850	33,130
Engine and Turbine Division of NPA		
copper	29,178	31,130
aluminum	3,091	2,927

Consolidated Edison Co—Construction proceeding according to schedule. No drop in industrial sales.

Pennsylvania Power & Light Co—At Sunbury Plant lack of steel for boiler foundations will slow installation. At Martins Creek excavation work is now in progress. Work may be delayed for lack of foundation steel. There has been some slump in industrial sales.

Duquesne Light Co—No construction difficulties, but kilowatt hour sales are down about 25%. Part of this decrease is due to reduced operation of commercial bituminous coal mines.

West Penn Power Co—Some delay in plant construction. Total sales are down 20% The drop is heavy in the captive (steel company owned) coal mine area and in the limestone district where quarries supply the steel industry.

Toledo Edison Co—No construction delays. Metal working load is not heavy, but the closing of the big Willys-Overland automobile plant will be felt.

Ohio Edison Co—Construction work going ahead. Kilowatt hour sales in June were 18.5% below June of '51. In the first two weeks of July they were 16.5% behind.

Cleveland Electric Illuminating Co—At Eastlake Plant all structural steel work has been halted, but boiler installation is proceeding. Some tower lines have been held up. Industrial kilowatt hour sales were off 10% in June. This drop was due almost entirely to lack of demand by steel mills and metal fabricating plants.

Detroit Edison Co—Schedules for the four-unit St. Clair Plant have been set back. The first unit was scheduled for operation in March 1953, but this schedule can't be met. No other construction has been affected. In the early weeks of the strike primary light and power sales fell 20% behind estimates. Since then two of the larger steel companies have settled, and present loss is 9%.

Consumers Power Co—A large addition to Weadock Plant is being held up. Prior to the strike there were two shifts of construction workers; now there is one. Some material specifications have been changed to keep line construction going, but in two weeks line construction will be hard hit. Sales have been behind about 6% in kilowatt hours. But with the auto industry down, an official said, "We expect (power send-out) to go all to hell next week."

The auto industry is hard hit. There are about 100,000 auto workers in Detroit and 200,000 in the state out of work. There are 8,000 building trades workers idle in Detroit area.

Wisconsin Electric Power Co—No construction delays yet, but continuation of the strike could affect Oak Creek addition due in 1954. Some lag in industrial sales.

Southern California Edison Co—Construction is at a standstill but not because of the steel strike. Instead the cause is a strike of the operating engineers and iron workers. This strike has closed down all heavy construction in the region. Industrial power consumption was behind 5% on July 1, and trend was accelerating.

Los Angeles Department of Water and Power—Valley Steam Plant will be delayed because of deliveries of equipment. Steel transmission towers must be delivered in August to meet schedules. Percentagewise growth of industrial energy has been slipping since August 1951. No decrease is yet attributable to the strike.

Pacific Gas & Electric Co—No affect on present work, but future construction will be affected. There has been an increase in the rate of deceleration in industrial sales.

Kansas City to Bagnell Dam to St. Louis

Line will make it possible to "wheel" power between Missouri-Iowa and Georgia-Alabama

A 206-mile, 154-kv power line linking Kansas City, Mo., and St. Louis has just gone into service. The line was constructed jointly by Kansas City Power & Light Co and Union Electric Co of Missouri at a cost of about $4.5 million.

Completion of the interconnection and a line now under construction by Union Electric to Joppa, Ill., will tie more than 60 electric systems together and make it possible to "wheel" electric power either way between Georgia-Alabama and Missouri-Iowa. The completed tie line will facilitate the supplying of power to Atomic Energy Commission's gaseous diffusion plant under construction at Paducah, Ky.

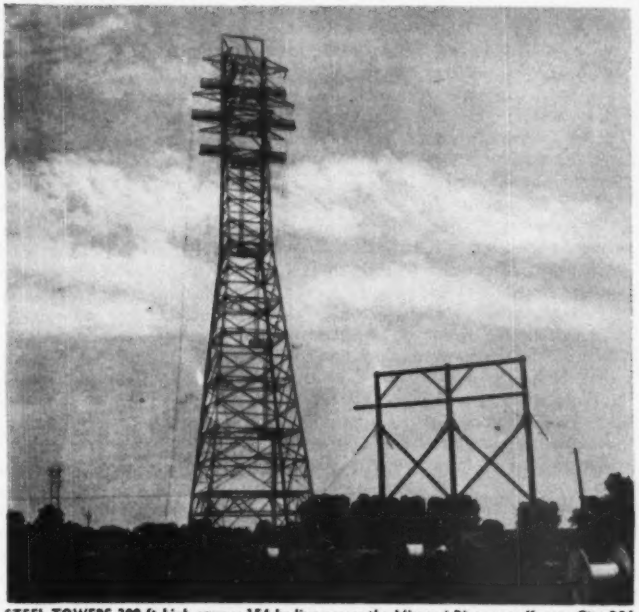
Joint Project . . . Kansas City P&L's portion of the line runs from its Hawthorn Station at Kansas City a distance of 105 miles east to a point near Salisbury, Mo. It connects with the 101-mile line from Bagnell Dam constructed by Union Electric.

Except for five steel towers, two at the Missouri River crossing in Kansas City and three at the crossing at Boonville, the line consists of two- and three-pole wooden structures carrying 154-kv aluminum cable steel-reinforced conductors.

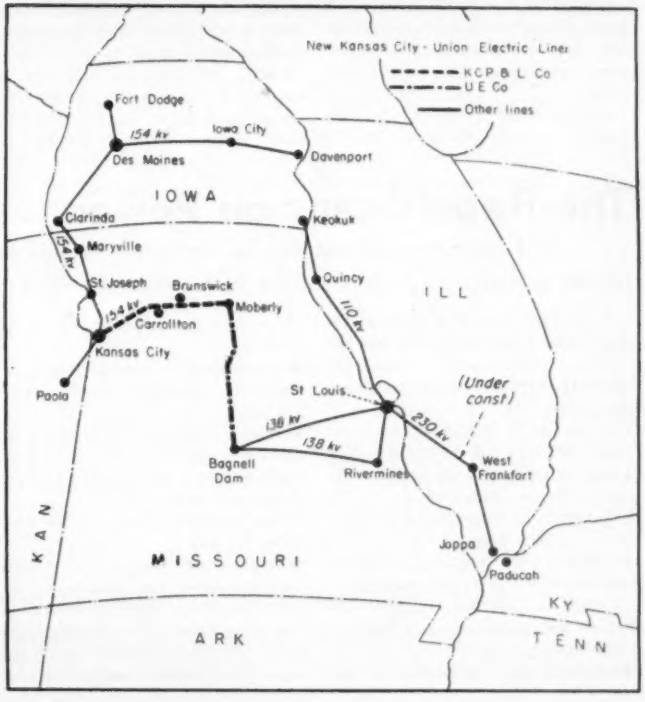
The line has an exchange capacity of 70,000 kw. This will permit maximum use of the newer and more efficient generating plants on each of the systems. It also will provide a reserve power pool from which the two utilities can draw during an emergency or when units are out for repair.

Pools Power . . . In addition to the link with Union Electric, Kansas City P&L is a member of a power pooling group including St. Joseph Light & Power Co, Iowa Power & Light Co, and Iowa-Illinois Gas & Electric Co. This tie line stretches 531 miles.

Union Electric has completed or is building lines to interconnect its system with Illinois Power Co, Central Illinois Public Service Co, Kentucky Utilities Co, Electric Energy Inc, and the Tennessee Valley Authority.



STEEL TOWERS 300 ft high carry a 154-kv line across the Missouri River near Kansas City P&L Co's Hawthorn Station. Pole structure at right is dead-end for the line going to Hawthorn



Cook Charts New Course for SEC

Securities and Exchange Commission is set to come about on an entirely new tack. Chairman Donald Cook last week proposed that the commission, long concerned with reducing huge holding company setups to smaller integrated systems, now recommend ways in which the nation's operating utilities may be more economically combined.

He proposes that the commission make the most comprehensive nationwide survey of the country's electric and gas systems ever undertaken.

Purpose of the new study would be to determine the types and sizes of regional or area systems that can best serve the public interest. Cook believes the study may point the way to more economical use of the nation's power resources and improved rate structures.

Michigan Talk . . . The SEC chairman did not specify when he wants to begin the survey, but left the impression he will push it along as rapidly as possible. He described his proposal in a speech given as a part of the Public Utility Executive Program held by the school of Business Administration at the University of Michigan last Thursday. (For the story behind the university program, see EW, July 30, 1951 p 64.)

Congressional authority for the study is given in little-known Sec. 30 of the 1935 Public Utility Holding Company Act. Whether Congress has or will make funds available for the study was not made clear in Cook's speech.

Since SEC really got down to work in 1937 it has been mainly concerned with carrying out Sec. 11 of the act, which directs it to reduce uneconomical holding company systems to integrated systems.

First step in the proposed study is to identify the major economic areas or regions in the country. Next job would be to collect data on the electric and gas systems in each area. Cook emphasized that SEC has authority to collect data from all systems, whether or not they are subject to federal jurisdiction.

Integration . . . Among information to be sought would be detailed cost studies, evaluation of the relative efficiency of each system, and possibilities of integration with other systems either through merger or contractual arrangement.

This information, along with recommendations, would then be combined into area or regional reports. Next step would be to get the recommendations accepted by parties concerned. SEC has no authority to enforce its recommendations on electric or gas systems. But Cook believes many systems would voluntarily put the recommendation into effect. He also pointed to the Federal Power Act as a source of authority for enforcing some of the recommendations.

Involves FPC . . . Cook knows that much of the information needed for the study is already in the hands of the Federal Power Commission and he looks forward to working closely with that agency.

To conduct the study, Cook wants to set up a new division in SEC manned by engineers, analysts and lawyers. He believes this division should avoid taking sides in the public-private power controversy.

Material Control Agencies Face Cutback in Funds

Government materials control agencies will have to get along with less money during the present fiscal year than they did last year.

Final allotments of funds have not yet been made to the two agencies that oversee electric power expansion, but it appears they will share in the general cutback of funds approved by Congress.

Defense Electric Power Administration requested $954,000 for its operations during the present fiscal year, compared with $996,000 allotted last year. This year's request was included with requests from several other Interior Department agencies. Congress cut the overall request by some 22%, but it remains to be seen whether the cut will apply proportionately to the Interior funds.

National Production Authority requested $26.9 million this fiscal year compared with some $30 million last year. NPA's parent agency the Department of Commerce, still must make the funds allotment to NPA.

The Republicans on Power

1952 platform does not presage any great change in federal development program should GOP come into office

In its 1952 campaign platform the Republican Party has drawn the line on some electric power issues—left others up in the air. For the most part, the policy statement squares with Gen Dwight D. Eisenhower's present views. What he will do in the heat of a campaign to gain votes in the public lands states is another thing.

Based on its adopted platform, the GOP this year favors:

- Continued construction of authorized hydroelectric projects with priority given to those with defense significance and those in critical flood or water-shortage areas.
- Eventual local ownership of federally sponsored reimbursable water projects.
- Comprehensive planning of economically justifiable public works projects.
- Federally assisted rural electrification where generation and distribution facilities are not available through private enterprise.

The Republican Party, in its platform, opposes:

- Creation of "all-powerful federal socialistic valley authorities."
- Efforts of the Truman administration to undermine state control over water use or to acquire paramount water rights without compensation.

Index Is Available

Electrical World's semi-annual index for January-June 1952 has been prepared and copies are now available upon request. They may be obtained without charge. Address requests to Electrical World, Editorial Office, 330 W. 42nd St., New York 36, N. Y.

SAVE MAN HOURS—REDUCE OUTAGES

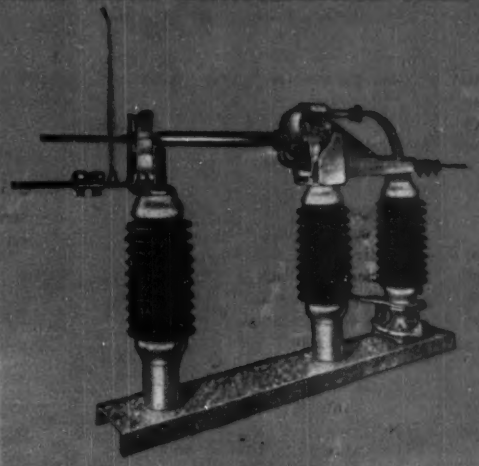
With the NEW KEARNEY

Group Operated

Rotating Insulator Type

DISCONNECT SWITCH

provides Cooler MAINTENANCE-FREE Operation



Any unit that helps keep the meters turning and reduces the man hours required to keep it operating is worth investigation by *any* power company.

Here are just a few of the advanced design features that make this switch so desirable today. (For more detailed information write for bulletin 8-33.)

1. Heavy beryllium copper spring contacts with silver overlay at *both* ends of blade.
2. Fully adjustable to compensate for any changes in switch mounting structure.
3. Positive current path to blade through blade contacts at *both* ends of switch.

With this switch dependable performance under every variety of weather and operating conditions is assured.

JAMES R. KEARNEY CORPORATION

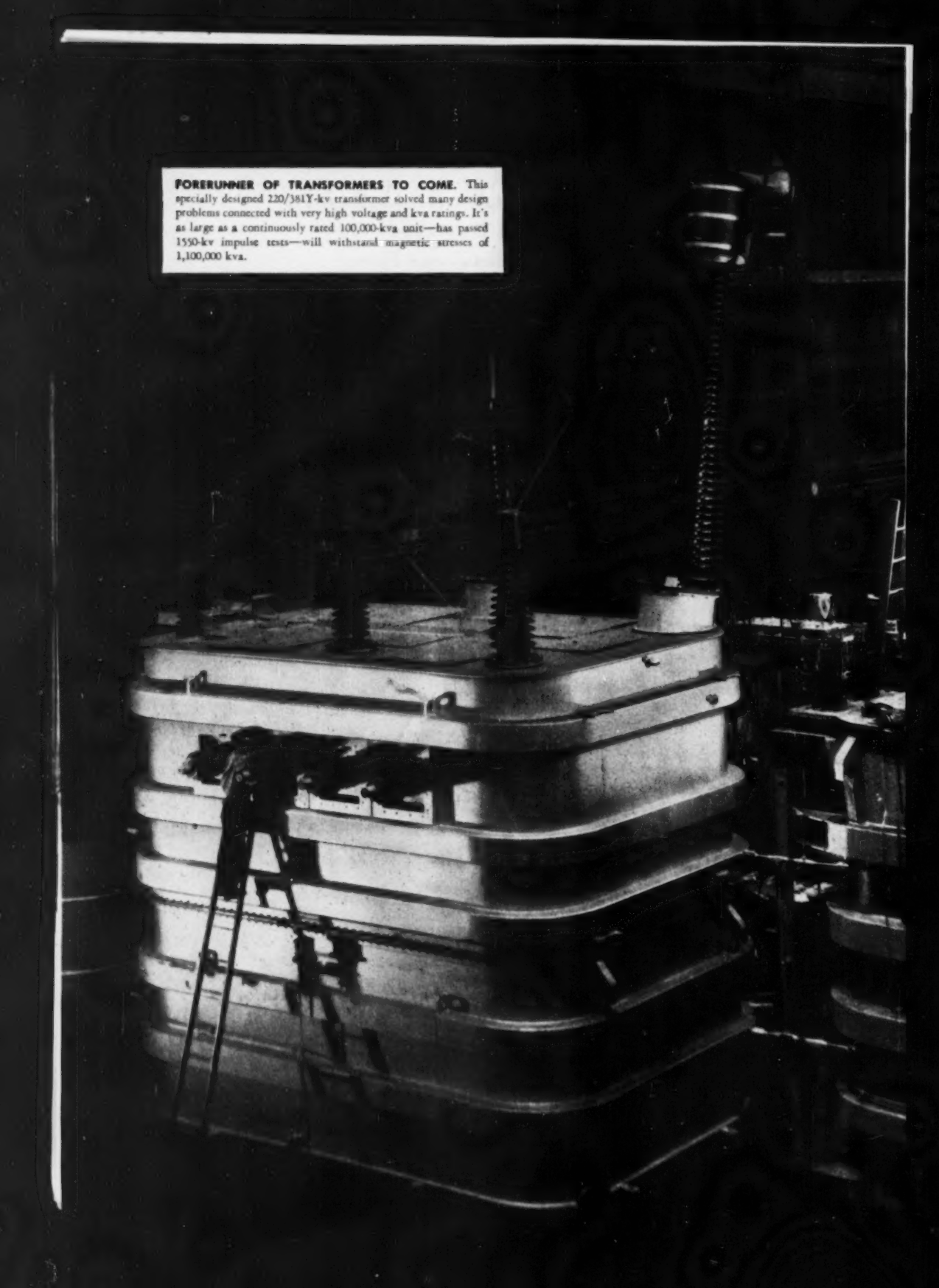
4224-42 Clayton Avenue • St. Louis 10, Missouri

Canadian Plant: Guelph, Ontario

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

KEARNEY Gives a Little More for a Little Less

Through Engineering



FORERUNNER OF TRANSFORMERS TO COME. This specially designed 220/381Y-kv transformer solved many design problems connected with very high voltage and kva ratings. It's as large as a continuously rated 100,000-kva unit—has passed 1550-kv impulse tests—will withstand magnetic stresses of 1,100,000 kva.

"CONCENTRIC LAYER" transformers withstand short-circuit forces of 1,100,000-kva duty

Units, impulse-tested at 1550 kv full wave, are installed in General Electric's new Switchgear Development Laboratory at Philadelphia.

Transformers for repeated short-circuit duty. Two 220,000/381,000Y—7750/15,500-volt transformers, connected to special short-circuit generators, supply the power that permits the new Switchgear Laboratory to simulate actual system faults. Each transformer can deliver 1,100,000 kva for a period of 10 cycles . . . and repeat this performance 15 times an hour.

"Concentric layer" winding solves short-circuit problems. The extremely severe duty requirements of these transformers were readily satisfied by the "concentric layer" winding. In this design, the conductor is wound in successive layers arranged concentrically and connected in series.

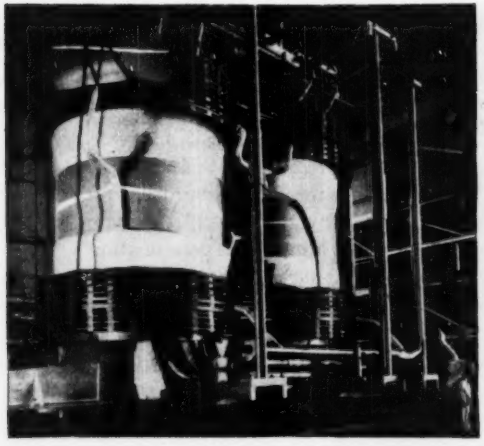
High short-circuit strength is inherent since major magnetic forces (as high as 2800 tons) are radial and well within both the tensile strength of the high-voltage conductors and the compressive strength of the cylinder on which the low-voltage coil is wound.

Impulse strength to withstand 1550-kv test was achieved readily with the "concentric layer" design. Voltage stress between layers is limited to the voltage of one layer since adjacent layers are connected in series.

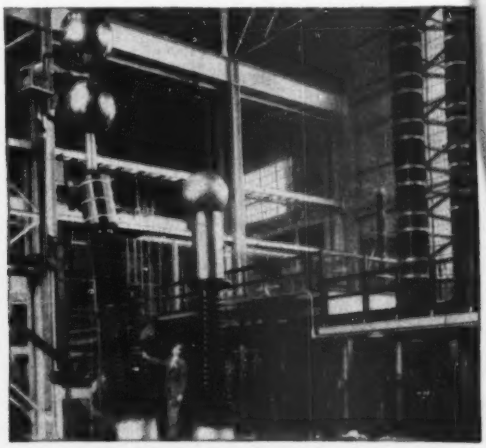
The cylinders of insulation between the layers are flanged over the ends of the winding to eliminate creepage in the direction of high electrical stress.

Uniform distribution of impulse voltages throughout the windings is assured by complete electrostatic shielding.

"Concentric layer" transformers for your system. These testing transformers, while designed to meet unusual requirements, demonstrate the excellence of "concentric layer" windings for high-kva, high-voltage service. If you are using or contemplating voltages 161 kv and above, you may wish more information on this design. Ask your local G-E apparatus sales representative for Bulletin GER-129, or write Section 401-31, *General Electric Co. Schenectady 5, New York.*

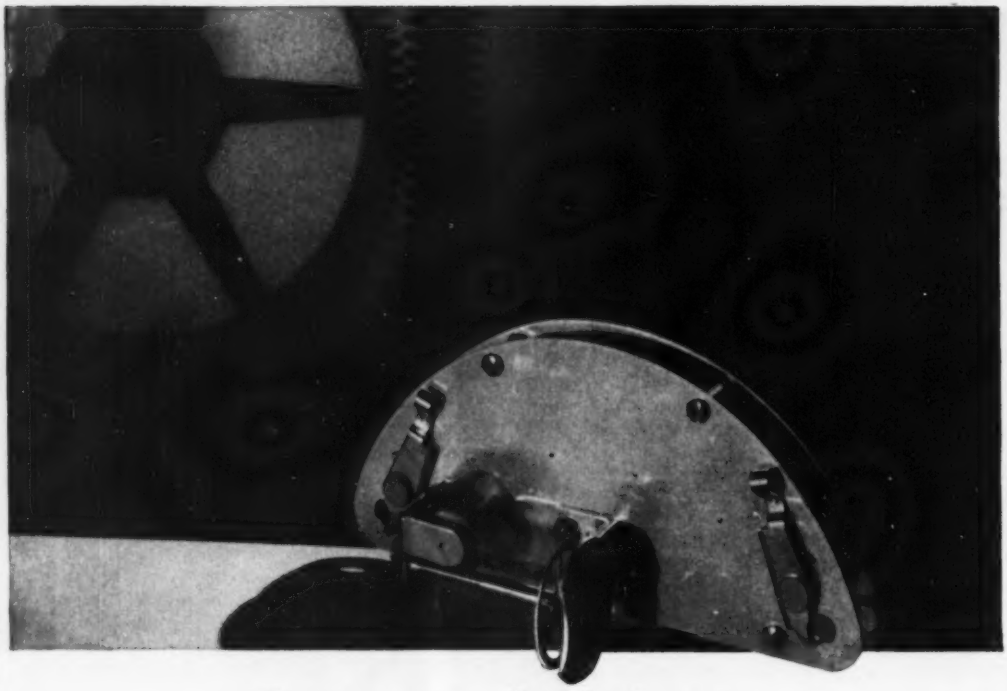


INHERENT SHORT-CIRCUIT STRENGTH of "concentric layer" design is even greater in these transformers because windings are tighter, more compact. Internal cooling ducts could be omitted since a continuous rating was not required for intermittent test operation.



282% OF RATED VOLTAGE. Test man sets 100 CM gaps for induced voltage test at 282% of rated voltage. Electrostatic shielding between all high-voltage-winding layers assures uniform impulse distribution in spite of the numerous tap leads brought outside the transformer.

GENERAL ELECTRIC



Sangamo J Meters

have a *permanently adjusted* register mesh

If watthour meters are to operate properly, it is essential that the mesh between the worm spindle and the worm wheel be exact at all times.

On Sangamo J Meters, this mesh is precisely adjusted at the factory by means of the shadowgraph, a magnifying device that facilitates exact adjustment of mesh. The adjustment is permanent because Sangamo's dowel pin mounting arrangement and locking levers for the register insure alignment of the precise original mesh any time the register is replaced after being reset.

The register of the J Meter is designed to assure the least friction and to impose the lightest possible mechanical burden. It is easily handled by the powerful driving system of the J Meter. The combination of this free-running register . . . the oil-less bearing system . . . and exceptionally high driving power permit the J Meter to register fully all of the kilowatthours consumed at even the lightest loads.

Only Measured Facts are Known Facts

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

Sangamo J Meters have proved their ability to meet today's requirements and tomorrow's anticipated loads with sustained accuracy, economy of maintenance and troublefree performance.

SM52-8

Diffusion Plant Okayed

AEC project wins approval of Congress in last hour before adjournment, breaking a two-day deadlock

As in one of those cliff-hanging scenes in the old movies, the adjourning Congress just barely rescued the one-billion-dollar gaseous diffusion plant Atomic Energy Commission proposes to build as the keystone of its new expansion program.

Money for the plant was approved in the last hour of the second regular session of the 82nd Congress.

$2.9 Billion Voted . . . In breaking a two-day deadlock, Congress approved funds amounting to nearly $2.9 billion dollars to be used by AEC to expand two of its present gaseous diffusion plants and to construct a new plant—probably in the Ohio Valley, although the site has not yet been definitely announced. Power requirements (see table) for these new plants will total 3.4 million kw and the plan is to let electric companies furnish a large part of the power.

In addition, the supplemental AEC funds approved by Congress will permit expansion of the H-bomb plant on the Savannah River and the reactor plant at Hanford, Wash. Increased power requirements for these proposed additions were not spelled out in the testimony given to Congress. As for sources, it is assumed that AEC will expand its own power plant at the Savannah River site and may purchase some additional power from South Carolina Gas & Electric Co. Expansion at Hanford will require additional power from the Bonneville system.

4 Million Kw Needed . . . Best guess is that the total requirements for the AEC expansion program will be about 4 million kw. Some government power experts believe electric utilities may be able to absorb this load within the limits of the 32 million-kw expansion program which is still scheduled to come in between the first of the present year and the end of 1954.

A major portion of the AEC expansion power requirements will come in during 1955—after the present electric power expansion program is concluded.

Counting on Private Power . . . At hearings before Congress, Chairman Gordon Dean of AEC made it clear that he is counting on a 15-company group to build the 1.8 million-kw power plant to supply the proposed new gaseous diffusion plant. However, AEC requested $220 million to build the power facility "should we be unable to arrive at satisfactory negotiations with the groups of companies who are now negotiating with us for power . . . "

In another section of the bill, AEC requested $227 million for cancelling the proposed contract with the power company group should AEC power requirements terminate at the new site before expiration of the contract. The contract, which will be for a 25-year term, has not been finally negotiated because the site has not been chosen.

Companies negotiating with AEC on the 1.8 million kw contract are: Appalachian Electric, Indiana-Michigan, Ohio Power, Ohio Edison, Pennsylvania Water & Power, West Penn Power, Potomac Edison, Monongahela Power, Toledo Edison, Dayton Power & Light, Columbus & Southern Ohio Electric, Cincinnati Gas & Electric, Kentucky Utilities, Louisville Gas & Electric, and Southern Indiana Gas & Electric.

Costs and Power Requirements
New AEC Gaseous Diffusion Facilities

Plant	Total Cost (in millions)	Kw Required	Source of Power
Plant X—(Probably in Ohio Valley)	$1,239	1,800,000	15-Company Group
Oak Ridge	464	950,000	TVA
Paducah	459	840,000	25% EEI, Inc 75% TVA

Negotiating with EEInc . . . Of the 840,000-kw additional capacity required for the Paducah plant expansion, AEC is negotiating with Electric Energy, Inc, to supply 25%, Tennessee Valley Authority the remainder.

Paducah's presently authorized power requirement is 1.25 million kw, of which EEInc is to supply half and TVA is to supply half.

TVA will supply the entire 950,000 kw of capacity needed for expansion of the Oak Ridge plant.

To enable TVA to meet its AEC obligations, Congress appropriated $150 million for the current fiscal year. This money would permit TVA to begin construction on two new plants and expansion at two plants already under construction.

TVA Expansion . . . Total cost of the TVA expansion will run $305 million to be completed in 1956. Location of new plants is as follows:

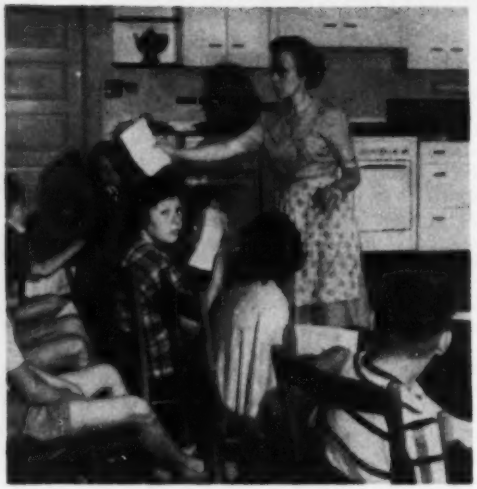
Four additional units at Shawnee	540,000 KW
Two additional units at Kingston	360,000 KW
New plant, east Tennessee, 2 units	360,000 KW
New plant, middle Tennessee, 2 units	450,000 KW
Total	1,710,000 KW

'Bullet-Proof' Transmission Line

Cape & Vineyard Electric Co, Hyannis, Mass., can boast that its transmission lines will withstand practically anything. A routine inspection recently revealed four 50-caliber machine gun slugs in a 4/0 ACSR 110-kv transmission line and one in a parallel 22-kv circuit. No service interruptions occurred. The lines are in the vicinity of the Camp Edwards firing range. George Stewart, driver-timekeeper for the utility, shows where one of the missiles became imbedded in the strands of the 110-kv conductor.

You're welcome . . .

. . . to Jackson's Mill's Farm Electrification Laboratory, Ruth Wittman, Monongahela Power Co hostess, says to an incoming class



Here's how . . .

. . . to run a neat kitchen Miss Wittman tells the 4-H'ers once she has them on the inside. For results see lower right, next page

How to Live Better on a Farm . . .

. . . is lesson taught at West Virginia's permanent Farm Electrification Laboratory supported by Monongahela Power Co and other utilities. Aim is wider and wiser use of power

Late last month, 360 boys and girls from Harrison County in West Virginia descended upon Jackson's Mill, the state's 4-H Camp located five miles north of Weston. They came to learn what thousands of others have learned there before them: how to live better on a farm.

Beginning with wake-up time at 7 AM, they found time to play, to study, and to meditate. For each of the five days of the stay, they used their 15 waking hours swimming, singing, and playing games; attending tribal meetings, vesper services, and patriotic ceremonies; and, primarily, learning new crafts, ranging from basket weaving to lamp making. The remaining nine hours a day they slept in the Mill's 14 permanent cottages.

To a large degree, they were able to do these things because of the existence of the Monongahela Power Co, with home offices 50 miles away in Fairmont. It was Monongahela Power which provided much of the equipment with which the children worked, the overall supervisor for the week's activities, as well as the instructors in the major educational center at the Mill—the Farm Electrification Laboratory. The company's effect on the history of the Mill has been similarly pervasive since it donated the five acres upon which the camp was founded.

Boyhood Home . . . On those five acres Thomas J. "Stonewall" Jackson, famed Confederate Civil War general, made his boyhood home, since destroyed. He lived with an uncle who operated a grist mill which still stands in excellent state of preservation. In 1921, Monongahela Power—then known as Monongahela West Penn Public Service Co—was using the site for a park, as part of its street car holdings.

Thinking that the area could serve a more useful purpose, company officials turned the land over to the state, with the recommendation that a 4-H camp be started there. The state legislature acted quickly to establish the camp and make it part of the Agricultural Extension Service of the University of West Virginia, headquartered 70 miles away in Morgantown.

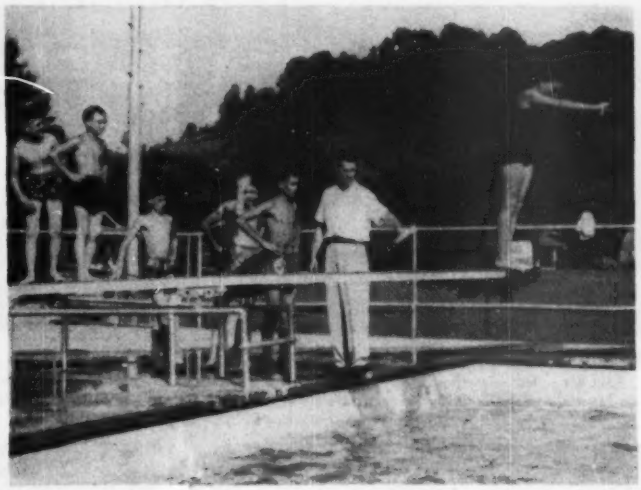
Now beginning its 33rd year, Jackson's Mill has spread out over 523 acres of rich, hilly, West Virginia countryside. The first permanent state 4-H camp in the country, it has served as a model for similar enterprises undertaken in several other states.

Though it is primarily for the kids, it is a meeting place and laboratory for all the people of West Virginia. It operates on an 11-month schedule, with more than 100 organizations using it for educational conferences and training meetings. It provides facilities for education groups, farm women's clubs, agricultural organizations, youth activities, leader training schools, and many other functions.

During their stay last month, the Harrison County 4-H'ers used the Mt. Vernon Dining Hall (which served 136,000 meals last year), an assembly hall, health center, livestock pavilion, a natural amphitheater, an extensive play area, a swimming pool, and the

Generating power . . .

. . . by pumping bike, this boy finds it takes real energy to light a 40w bulb



Into the swim . . .

. . . go these Harrison County kids, who apply rule that all work and no play makes Jacks and Jills dull boys and girls. Watching is Sam Kistler, Monongahela recreation counselor

Century of Progress Building where church services were conducted. None was more used or more useful, however, than the Farm Electrification Laboratory.

Power Company Backed . . . Built in 1940 to provide a place where farm people could learn proper applications of electricity, the F-E building is underwritten by all the power companies and both of the rural electric cooperatives in the state. In addition to Monongahela Power, contributors to the upkeep of the lab are Appalachian Electric Power Co, Potomac Edison System, Wheeling Electric Co, Virginia Electric & Power Co, Preston County Light & Power Co, Elk River Power Co, Harrison Rural Electrification Association, and Hardy County Light and Power Association.

Monongahela Power foots the greatest share of expenses. The lab is located in the center of its 36-county service area, and more of the persons using the building come from its territory than from any other part of the state. In addition, Monongahela provides a full-time hostess from its staff of home economists.

Over a typical season, F-E is used for many home purposes. During the Farm Women's Conference in May, for example, classes were conducted for four successive days on food and nutrition, kitchen planning, electrical equipment, home furnishings, and farm housing. Thirty different groups held teas and receptions and planned parties in the building. Some of them had a social session every night for which refreshments were prepared using the electric ranges, refrigerators, freezers, and coffee makers. All this tends to create among the women attending a desire for more labor-saving electrical equipment in their own homes.

Here goes nothing . . .

. . . five youthful "Homemakers" think with anxious anticipation as the first product of their home economics lessons goes into the electric fire. P.S.: It didn't flop

CONTINUED ON NEXT PAGE

Young and old alike . . .

. . . can get helpful instruction at the laboratory. At left, Monongahela Power representative Randall Leggett tells a group how to make lamps from material provided by the power company, while, at right, I. N. Fetty demonstrates workshop equipment to a farm family

For further transfer . . .

. . . to farm housewives is specialized information that home demonstration agents pick up at the lab for use in their work. At left, they hear a lecture on small electric appliances, and, at right, they become familiar with the latest laundry equipment available at lab

Monongahela officials don't say it explicitly, but this hidden promotion is an indirect reason for their interest in the lab.

As A.C. Spurr, Monongahela president, puts it: "It is one part of our overall objective to make the farm family content on the land, to make the family more prosperous, and, eventually, to make the power company better off."

The top floor of the split-level building is equipped with modern electrical appliances for the farm home. There are four all-electric kitchens, three complete electric home laundries, a wide variety of small appliances, and a demonstration room that includes all types of modern home lighting fixtures and lamps.

Farm Production Stressed . . . Basement floor area is divided into sections for display of groups of farm equipment for use in the barn, dairy house, poultry house, and workshop. Among farm production materials available for public perusal and use are egg sorters, water pumps, band saws, chick and pig brooders, a milk cooler and sterilizer, ice cream freezer and churner, water warmer, hammer mill, and corn sheller. As is the case with the home appliances, most of these are donated by manufacturers, who make certain they always have their latest available models on exhibition.

The kitchens serve two purposes: (1) To show the different kinds of arrangements possible, and (2) to illustrate how families on four income levels can make most effective use of their resources. The costliest—the demonstration kitchen—includes specialized equipment, such as a dishwasher, garbage disposer, deluxe model range, and an electric hot water heater.

The 360 Harrison County youngsters at the lab last month received the grounding for using this and other equipment in the building at morning classes conducted from Tuesday through Friday. Their courses ranged from "Kitchen Planning" to "Use of Small Electric Appliances"; from "Home Lighting—Methods and Equipment" to "Electrical Safety in the Home," and "Electrical Farm Equipment You Can Build."

In the words of Monongahela Power Home Economist Ruth Wittman, who had charge of the classes: "All this instruction helps to take the mystery out of electricity; to show youngsters and grown-ups how to measure power supply and match it with needs; and how to keep appliances and wiring in proper working order." She needn't have added that put together these things were making more thorough West Virginia homemakers for the future.

AN EXECUTIVE WITH A WELL KNOWN UTILITY ASKS—

"Just How Much Radio Interference Caused by Insulators does a PINCO 'NOCORONA' UNIT Eliminate?"

The best way to answer this question is to say that at radio frequencies, Pinco "Nocorona" Insulators are *silent*. In other words, radio interference is reduced to a minimum!

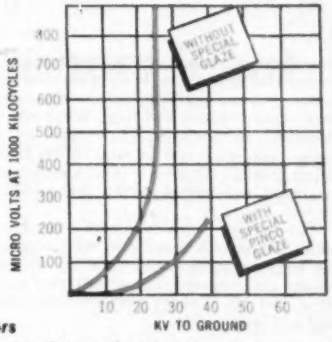
In the 1920's, as the popularity of radio increased, set owners demanded that something be done about power line "interference." In 1929, Pinco introduced its "Nocorona" units which proved to be an effective means of eliminating radio interference. Today, thousands of these Pinco "radio-proofed" insulators are in service on distribution and transmission lines from coast to coast. Television viewers too, are benefiting by the application of this Pinco principle in previously affected areas.

Here's the ANSWER . . .

Pinco "Nocorona" units combine all of the outstanding features of Pinco standard Insulators, *plus* the application of a special glaze at the critical points—the conductor groove, tie wire grooves and the pinhole. This glaze, being conducting, creates a bond between the conductor and the insulator, thus eliminating the possibility of brush discharge from the conductor to the insulator.

Here's the PROOF . . .

The accompanying chart shows the performance curves of the Pinco L-75 (plain) and the L-75R (Nocorona) 45 K.V., Multi-part Insulators . . . positive proof that Pinco "Nocorona" Insulators definitely eliminate radio interference!

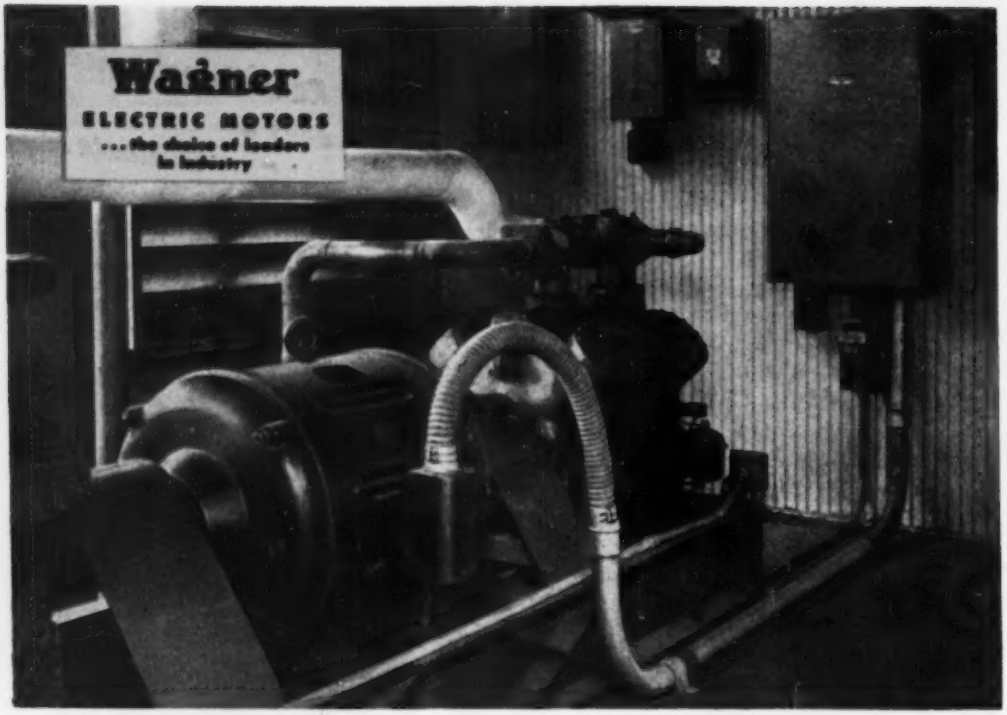


For Complete Information regarding Pinco Pin-Type Insulators refer to page 28 of Pinco Catalog No. 49 or contact the Joslyn office in your locality.

PINCO INSULATORS

The Porcelain Insulator Corporation
766 Main St., Lima, N. Y.

Sales Agents: JOSLYN MFG. & SUPPLY CO. *Offices in Principal Cities*



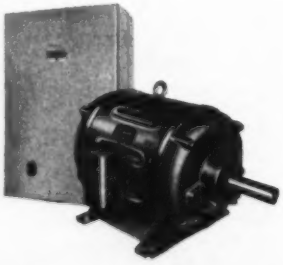
Pick-up for Production...

Summer temperatures in St. Louis meant serious production difficulties for Cupples-Hesse Corporation, one of the largest manufacturers of envelopes, wax paper products and bags. Whenever the temperature rose above 85° F, paraffin on the wax paper became too soft for feed rollers to carry the paper through the presses. This meant shut downs on many afternoons during the plant's busiest period.

The problem was solved with a hundred-ton air conditioning unit that keeps the temperature for the entire department (20,000 sq. ft.) at 75° F winter and summer. The installation is powered by a 100 hp Wagner part-winding Motor and Starter Combination.

These Wagner Combinations meet "locked-current" restrictions on large installations by limiting the in-rush of electric current during the starting period. They offer substantial savings in both purchase price and installation.

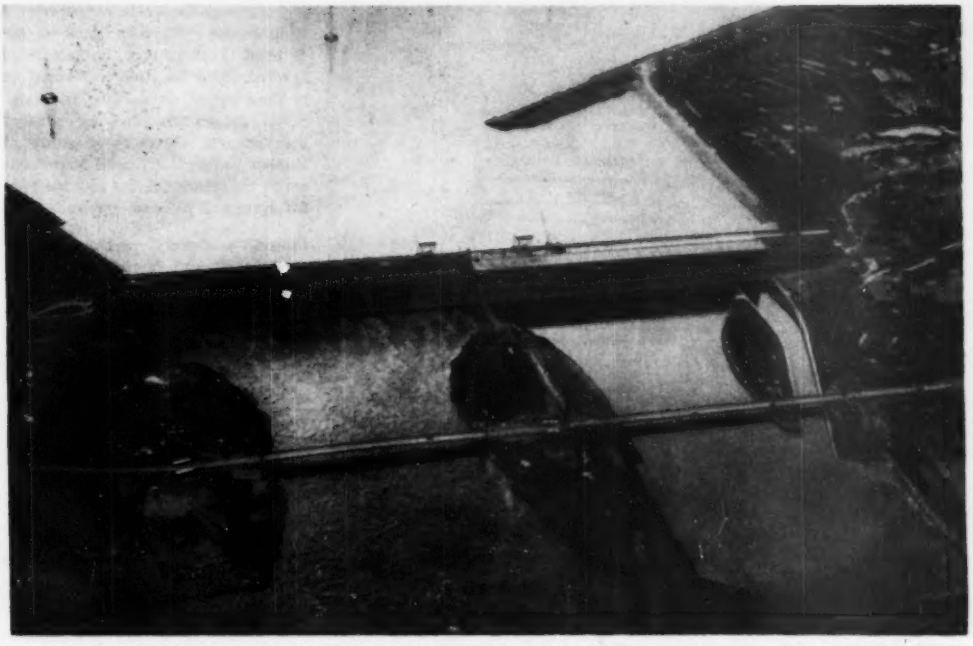
Wagner motors are made in sizes from 1/125 to 400 hp, with a wide variety of enclosure types and mountings. Wagner engineers are qualified to specify the correct motor for your needs. Consult the nearest of our 32 branch offices, or write us.



Wagner Electric Corporation
6456 Plymouth Ave., St. Louis 14, Mo.

ELECTRIC MOTORS • TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

WM52-6



BEAUHARNOIS POWERHOUSE NO. 2 is latest addition, built for 12 hydro-electric units. It is shown at right end integrated with Powerhouse No. 1. Latter is on left end of dam and has fourteen main units. Third section is to be on right end of dam and will have twelve units

Montreal and Suburbs Need More Power; So Quebec Hydro Will . . .

. . . Expand the Beauharnois Plant

To the original 750,000-hp project on the St. Lawrence, 25 miles southwest of the city, the Commission will add 660,000 hp. But first its engineers had to make these nine decisions . . .

1. **Whether Power House No. 2 would be a separate structure or connected with PH No. 1.**
2. **Whether to use Kaplan or Francis turbines.**
3. **The desirability of closed ventilated, water-cooled generators.**
4. **Whether to mount the generators above or flush with the floors.**
5. **Whether to use direct-connected or separate exciters.**
6. **Whether to interconnect the control room of the new plant with the old.**
7. **Whether the units in the new plant should be approximately the same size as those in the old.**
8. **Where to locate the sluiceway and erection bay.**
9. **Where to bring out the high tension leads from the power house.**

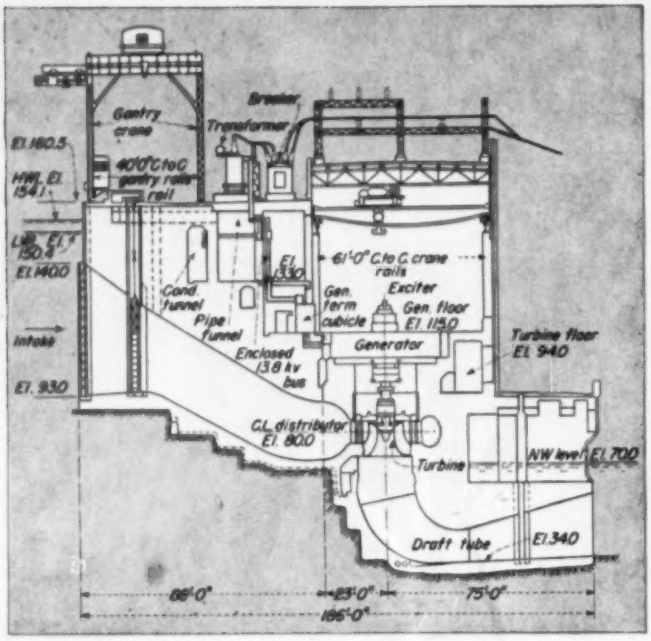
H. F. ABBOTT
Chief Designing Engineer
Power Development Division
Quebec Hydro Electric Commission
Montreal, Canada

When Quebec Hydro Electric Commission found increasing demand for power in the Montreal area, it decided to expand Beauharnois Plant. This is 25 miles southwest of Montreal at the lower end of a 15-mile canal connecting Lake St. Francis and Lake St. Louis, two enlargements in the St. Lawrence River.

Eventually this will be a 2-million-hp project utilizing the full flow of the river. To the original 750,000-hp capacity it was decided to add about 660,000 hp.

But before the addition could be made, nine points had to be settled.

← See list at left and turn page for decisions →



POWERHOUSE NO. 2 has Francis type turbines. These are rated at 55,000 hp at 80-ft head

Here are the commission's decisions:

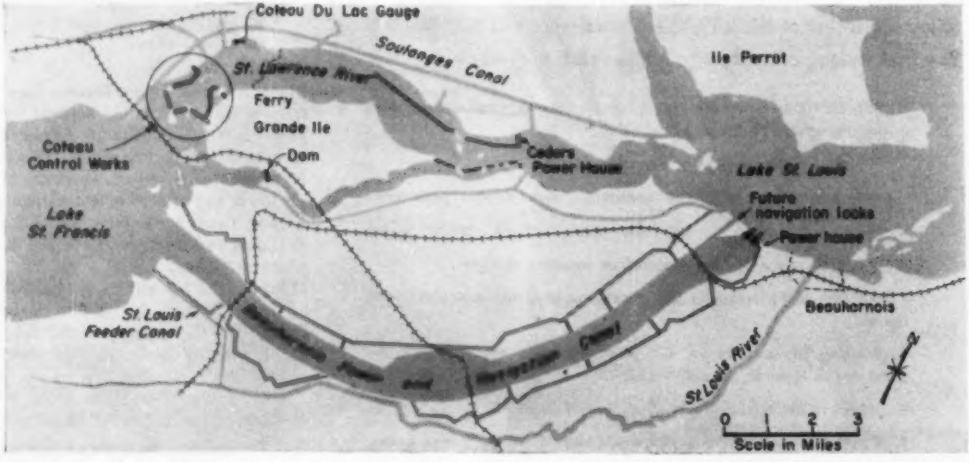
Structure Added to PH No. 1 . . . Reasons for considering an entirely separate structure for PH No. 2 included decentralization to avoid spread of damage by fire, flooding, explosion, or enemy action. However, the limited amount of separation possible did not appear productive of much advantage. Consequently the structure was made continuous with PH No. 1 to promote efficiency in operation and to make use of crane and other existing facilities.

Francis Type Turbines . . . Despite possible gains in efficiency and reduction in generator costs by using higher speed Kaplan or propeller type turbines for 50,000-hp units at 80-ft head, Francis type turbines were favored. This selection was based on reduced overall annual cost per horsepower, greater reliability, and reduced maintenance. Gains in efficiency of Kaplan turbines appeared to be offset by the additional first cost involved for appreciably deeper excavation.

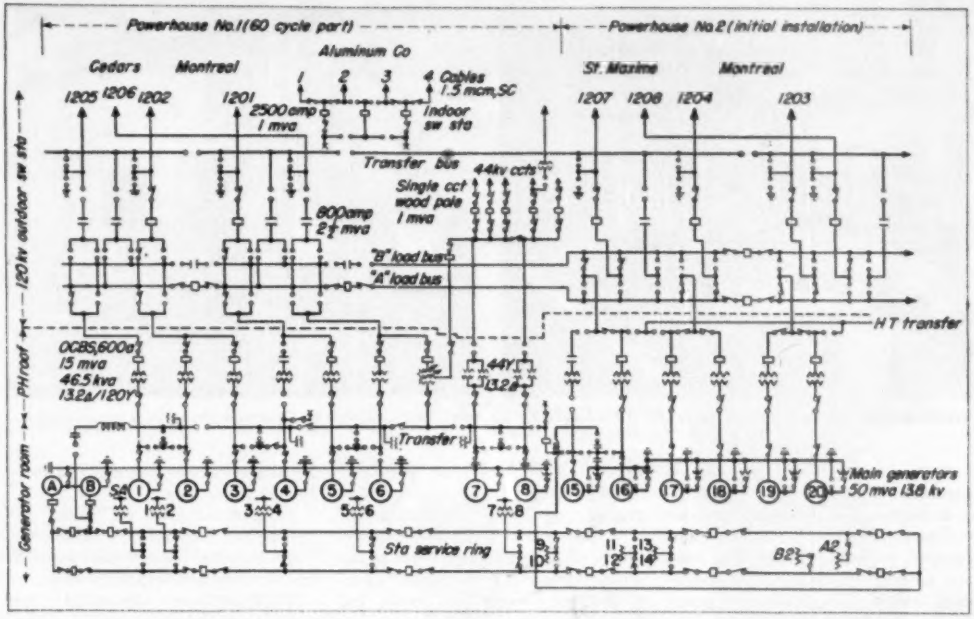
Closed Ventilated Generators . . . For relief from heat in the generator room during the summer and to reduce cleaning and maintenance, closed ventilated generators were selected. They will have water-cooled heat exchangers mounted in the four corners of the square housing to surround the stator.

Generators Flush with Floor . . . It was found physically feasible to lower the generator flush with the floor even though the generator center line had to be offset 2 ft further downstream. This lowering was agreed upon because of the advantages of limiting spread of damage in event of some failure, better operating conditions, reduced noise, the saving in cost of a steel housing, and better appearance.

Direct-Connected Exciters . . . Because an adequate supply of power for station service was available from PH No. 1, the economic advantage of using direct-connected exciters in PH No. 2 was not appreciable nor was there much choice from the point of view of reliability. Required response was obtainable in either case.



SKETCH shows location of the Beauharnois power project of Quebec Hydro Electric Commission about 25 miles southwest of Montreal



MAIN CIRCUITS on 60-cycle generation in Powerhouse No. 1 and Powerhouse No. 2 at the Beauharnois power project are shown in diagram

Adoption of direct-connected exciters was mainly justified on the basis of simplification of operation.

Control Room . . . Since PH No. 2 would share the loads and feed into the same transmission systems as PH No. 1 it was an advantage, and practically a necessity, to integrate the normal control for loading purposes. The decision to locate the essential control of PH No. 2 in the existing control room was made for these reasons:

1. It was feasible to reduce greatly the number and size of control cables between PH No. 2 and the existing control room at the east end of PH No. 1, by telemetering if necessary.

2. In emergency, control could be transferred to unit boards in PH No. 2.

A unit control board with complete control, metering, and protective equipment for each pair of units was provided adjacent to the generators. Automatic stop, start, and synchronizing were provided. Resorting to suitable interposing of currents and controls and dc-telemetering of watts and reactive volt-amperes, it was possible to provide for normal remote control from the existing control room, complete with adequate indication. These functions are possible while employing only one multi-conductor cable of No. 19 B&S wires per unit between the unit control board and the existing control room.

Units Similar in Size . . . For hydraulic, structural, electrical, and economic reasons the most suitable size of units was approximately that of PH No. 1, or 55,000 hp. Use was made of the four existing intakes in the bulkhead terminating the temporary north dyke of the forebay. However, a sluiceway was required with a capacity of 53,000 cfs to quickly compensate Lake St. Louis whenever a large reduction of water through the turbines was necessary, as in the case of sudden or weekend load reductions.

Sluiceway at West End . . . The sluiceway was located at the west end of PH No. 2. The fact that best use of the existing four intakes could be obtained only if applied to turbines as intended was one factor in the final decision. Another factor was to keep the sluice channel separate from the main tailrace. The erection bay incorporated over the sluiceway in the powerhouse would have been much more useful between the two powerhouses.

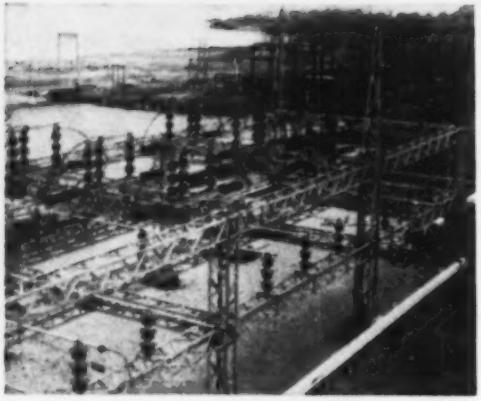
High-Tension Leads on Tailrace Side . . . From the center section of the integral powerhouse, ultimately about 3,000 ft long, the problem of bringing out high tension leads became rather intricate. Factors, not at first apparent, resulted in a late revision to bring out the leads from the tailrace side instead of the forebay side.

A complete rebuilding and rearrangement of the high tension switching station of PH No. 1 was entailed, also integration of this switching station with that of PH No. 2. Leads were brought out at 115 kv, one set of leads for each pair of units. The switching station is a double-load and transfer-bus arrangement permitting grouping of units and lines into separate systems as desired from time to time.

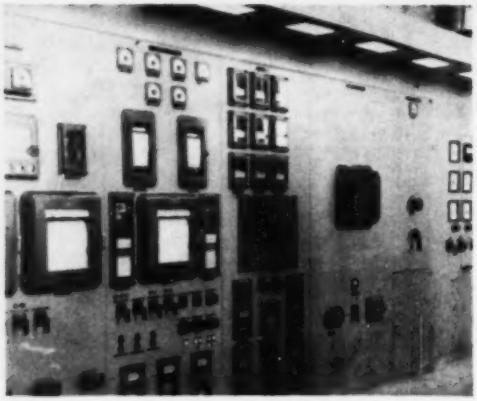
Improvements Provided . . . Some outstanding features of equipment adopted to enhance simplicity, flexibility of operation, and protection and also to reduce maintenance and annual cost include:

1. Fully enclosed, isolated-phase main 13.8-kv buses.

2. Enclosed low-impedance 550-v auxiliary power buses, in duplicate, with automatic transfer to the live source.



115-KV BUS and switchgear are located on roof of Powerhouse No. 2



UNIT SWITCHBOARD for Generators 15 and 16 is canopy lighted

3. Avoidance of main low-tension breakers.

4. Grouping of generator leads accessories, such as current transformers, potential transformers, main and neutral disconnects, and double-pole field switch together in a generator terminal cubicle.

5. Provision of a generator, neutral-grounding transformer with 15-kva resistive burden to permit continuing operation with a single ground fault.

6. 100 ma auxiliary current transformer circuits for remote indication protected by cold cathode tubes.

7. Avoidance of interlocks on disconnects by providing automatic indicating lamps for these at the mimic bus in conjunction with others at the disconnect operating point.

8. Normal switching control of the two-thought type, in which a selector is first positioned to the function desired such as "stop" or "start" or "close" or 'open," and then a button pressed to perform the operation.

9. Complete annunciation, phase by phase, of protective and alarm equipment, transmitted to the control room.

10. Cables mainly in checks and trays instead of in conduits.

11. Canopy-lighted unit control boards.

12. Cabinet mounted governors built-in to unit control boards.

13. Avoidance of all oil-filled equipment within the generator room.

14. One set of automatically switched stop-start equipment for each pair of units permitting stop or start operation on the 12 units to be initiated in any sequence and follow automatically, with recall at any point of automatic stop or start operation except during braking cycle.

15. Totalizing kilowatt and kilovar instruments of the potentiometer-thermal-converter type.

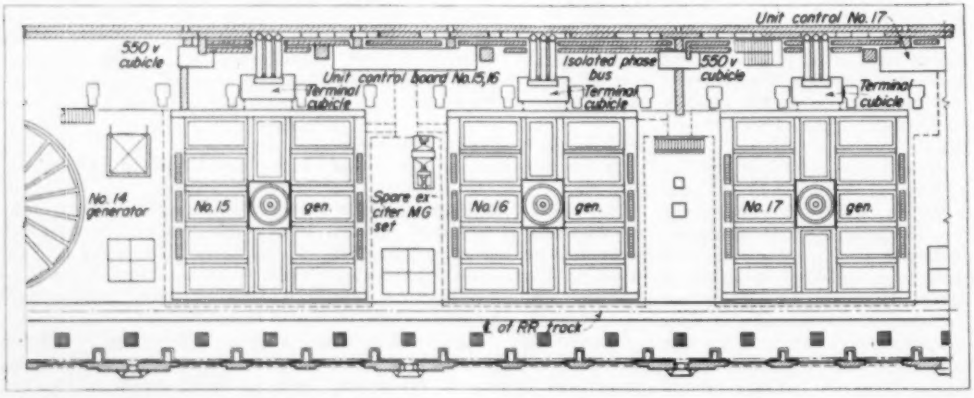
16. Terminations of cables to switchboards arranged on the dividing walls between panels, and similarly the auxiliary or interposing relays.

17. Raise-lower operations for governor, load-limit and voltage normally controlled in the control room from a console on the control operators desk.

18. Mimic bus, complete with all controls realistically placed, located on slanted bench-board of the main control switchboard.

19. All cubicles and switchboards enamelled in a carefully chosen grey-green with a matching darker-tone instrument trim.

20. Full fixed automatic fire protection of the forced fog type for transformers and oil circuit breakers on the bulkhead.



FLOOR PLAN shows section of generator room for hydroelectric units No. 15, 16 and 17

NEW! EXCLUSIVE!
L-M's 7.5 KV "FAMILY"
of cutouts with interchangeable doors!

50 and 100 ampere cutouts, each with:
new "PND" standard duty non-indicating doors
"PVD"* standard duty indicating doors
"PHD" heavy duty non-indicating doors
100 and 200 ampere switch blade doors

Here's another L-M "first"! The new 7500-volt family of 50 and 100 ampere cutouts, each with four interchangeable doors to meet a wide variety of services. As operating requirements change, you simply change a door—in 6 seconds the job is done! Saves warehousing, saves installation time, saves in operation.

Safer, too. Doors are removed or hooked on, all with the switch stick. When door is open, all parts are dead.

GET THE WHOLE STORY

Ask the L-M Field Engineer for details on L-M's new "first families"—the 7500-volt family shown here, *and L-M's new 5000-volt family*, also! Or write Line Material Company, Milwaukee 1, Wis. (a McGraw Electric Company Division).

50 amp. cutout with interrupting capacities up to 4000 amperes
1. "PND" standard duty non-indicating
2. "PVD" standard duty indicating
3. "PHD" heavy duty non-indicating
4. 100 ampere switch blade

L-M's new 7.5 kv "Family"

RATING	INTERCHANGEABLE DOORS AVAILABLE	INTERRUPTING CAPACITIES rms amperes
50 AMPERES	1. "PND" standard duty non-indicating	1200 amperes
	2. "PVD" standard duty indicating	1200
	3. "PHD" heavy duty non-indicating	4000
	4. Switch Blade — 100 amperes continuous current rating	
100 AMPERES	5. "PND" standard duty non-indicating	3000 amperes
	6. "PVD" standard duty indicating	3000
	7. "PHD" heavy duty non-indicating	8000*
	8. Switch Blade — 200 amperes continuous current rating	

"PND", "PVD", AND "PHD" are L-M Trademarks *Available soon

100 amp. cutout with interrupting capacities up to 8000 amperes*

5. "PND" standard duty non-indicating
6. "PVD" standard duty indicating
7. "PHD" heavy duty non-indicating
8. 200 ampere switch blade

LINE MATERIAL
fuse cutouts

Complete Coordinated Equipment for Distribution Today

LET'S LOOK AT THE FACTS

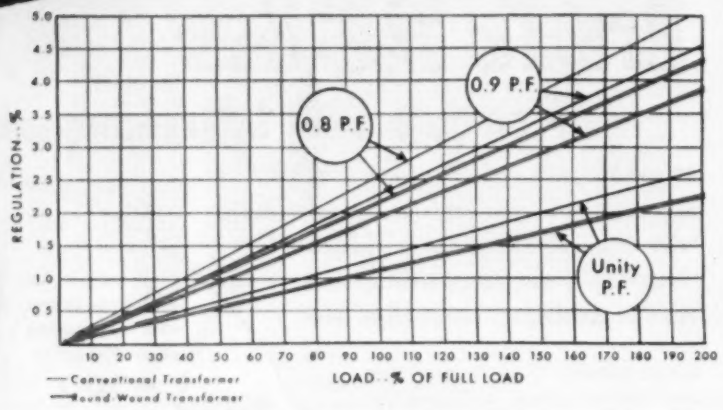


FIGURE 1—Regulation of a standard 50 kva 2400—120/240 volt Round-Wound transformer compared with that of a conventional transformer, showing the effect of load and power factor on regulation.

How L-M Round-Wound Design Improves Transformer Regulation

A brief discussion of the design factors affecting regulation, and the differences in the design of Round-Wound transformers that result in better regulation at all power factors.

By **JAMES G. EVERHART**
Chief Engineer,
Transformer Division,
Line Material Company

Voltage regulation, always an important factor for consideration, has in recent years received even more attention. Higher average secondary voltage at full load means brighter lights, less lamp flicker, and improved operation of the growing number of appliances. It is particularly important in the operation of television receivers, where low voltage produces far greater effect than is generally known by the public.

Higher voltage produces greater revenue to the utility company and, in these days of extremely close margins or actual operating losses, utility companies cannot afford to neglect any source of potential revenue.

State power commissions also have become factors in maintaining regulation. And with the higher average loading of transformers prevalent today, voltage regulation becomes a somewhat more pressing problem.

Use of Capacitors Helpful

Much can be gained from the use of capacitors to improve voltage conditions. But capacitors alone cannot be expected to solve the entire problem.

Neither can adequate primary voltage, ample transformer rating, or shorter secondaries of ample size. The transformer *itself* must be designed to provide good regulation.

Methods of Improving Regulation

Poor regulation in a transformer is largely the result of high impedance due to high reactance, and high copper loss. Often large mean-turn diameter is the cause of high copper loss and poor regulation. In general, most design improvements that will reduce copper loss will also contribute to improved regulation. The problem in transformer design is to achieve the desirable results without the sacrifice of other desirable performance characteristics.

Regulation also must be uniformly good over all power factors. Figure 1 indicates the effect of load on regulation, it being evident that the poorest regulation is obtained with combinations of high loads and low power factors.

Regulation with Round-Wound Design

A Round-Wound transformer basically consists of a wound core, with long round coils wound directly onto the annealed core. With the exclusive L-M method, the core is not cut or unwound in any way. This is not necessary since the coils are wound directly onto the core in an L-M designed winding machine. The construction is shown diagrammatically in Figure 2.

The design achieves a number of advantages—better cooling throughout the coils, with better overload capacity; lower exciting current; lower copper loss.

"Round-Wound" is a Line Material Co. trademark.

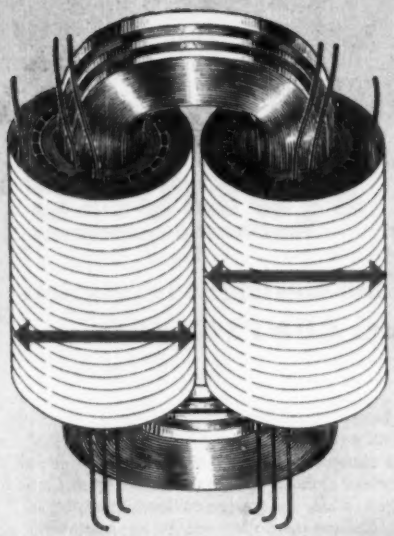


FIGURE 2—Round-Wound design. Long round coils are wound directly onto a wound core. Coils have low mean-turn diameter, a principal factor in the good regulation of Round-Wound transformers.

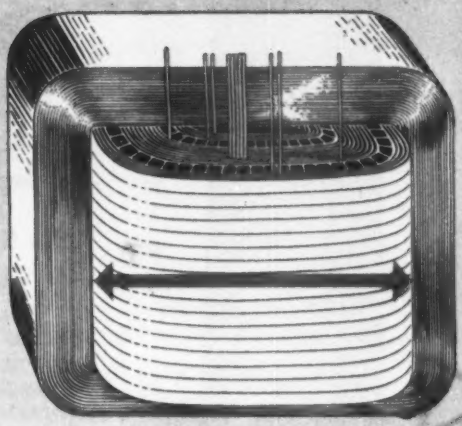


FIGURE 3—Shell type transformers generally have a much larger mean-turn diameter contributing to higher impedance, higher reactance, higher copper loss, which in turn results in poorer regulation.

The desirable smaller mean-turn diameter of the L-M coils is evident, by comparison of Figures 2 and 3 and examination of Figure 4. A higher efficiency core-coil arrangement also permits fewer winding turns. The combination of smaller turn diameter and fewer turns results in lower reactance and impedance, and in the desirable regulation indicated by Figure 1.

Thus the economy-minded power company can well take advantage of this Round-Wound design to secure, at one time, the savings offered by better regulation, lower losses, lower exciting current, and higher overload capacity.

Desirable Characteristics of L-M Round-Wound Transformers

Better Regulation: low resistance and reactance, providing low copper loss and better regulation, with more revenue to the utility and better service to customers.

High Short-Time Overload Capacity: long round coils and ample passages for oil circulation provide exceptionally good cooling with relatively low copper and hot-spot temperatures, permitting higher short-time overloads and higher load factors.

High Uniform Impulse Level: round coils are wound evenly, without hammering to shape; have longer creepage distance; ample insulation between layers and windings.

High Short-Circuit Strength: round coils have fundamentally superior strength characteristics, contributing greatly to the long life of Round-Wound transformers.

Low Exciting Current: because the wound core is not cut or disturbed, air gaps are not created in assembly, and exciting current is appreciably lower in this design.

Better Loss Ratios: the Round-Wound design makes possible an improved ratio of losses with lower total losses without sacrificing low exciting current.

For More Information

Ask the L-M Field Engineer for bulletin on L-M Round-Wound design, or write Mr. Everhart at Line Material Company, Transformer Division, Zanesville, Ohio (a McGraw Electric Company Division).

Round-Wound transformers are filled with ORTO®, L-M's oxidation-resistant transformer oil, inhibited for longer life.

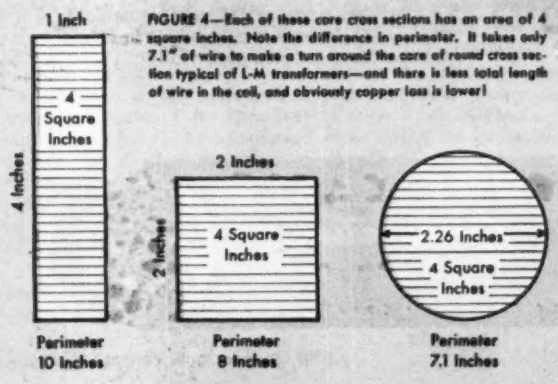


FIGURE 4—Each of these core cross sections has an area of 4 square inches. Note the difference in perimeter. It takes only 7.1" of wire to make a turn around the core of round cross section typical of L-M transformers—and there is less total length of wire in the coil, and obviously copper loss is lower!

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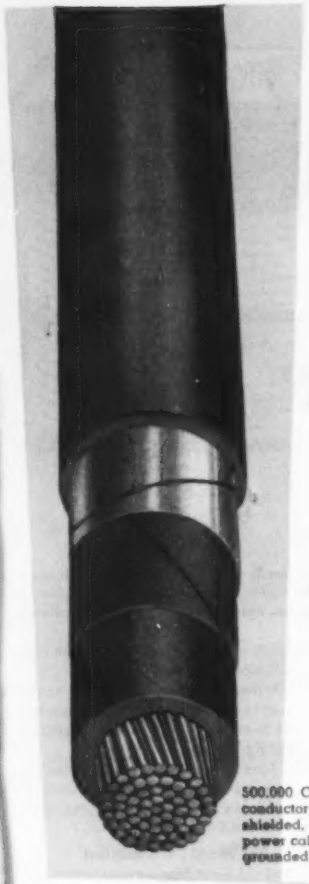
Transformers
Complete Coordinated Equipment for Distribution Today



500,000 CM stranded single conductor RoZone insulated, shielded, RoPrene sheathed power cable . . . 15,000 volts, grounded neutral.

Rome RoZone®

This Superior Ozone-Resistant Insulation Deserves Your CONFIDENCE

Q: WHAT IS ROZONE?

A: A PREMIUM quality, ozone-resistant, oil-base type insulation developed by Rome Cable research, exceeding *all* requirements of ASTM specification D-574. RoZone is exceptionally resistant to corona action and aging. It shows high electrical stability in water and possesses excellent electrical characteristics. While the preferred outer covering is a RoPrene (Neoprene) sheath, RoZone insulation can be supplied with either braided or lead sheath coverings. In addition, on shielded types of cable, a special thermoplastic sheath is available.

Q: WHERE IS ROZONE USED?

A: Rozone is recommended for all specialized or general purpose wiring where long-time dependability is paramount. It is particularly suitable for higher voltages up to 15 KV. With proper sheath protection, RoZone is widely used for high voltage underground and aerial power distribution, street lighting circuits, signal and control cables, as well as for low-voltage power requirements where conditions of moisture or heat are present.

Q: WHAT DO ROZONE TESTS SHOW?

A:
1. High resistance to aging. Longevity of original characteristics.
2. On the basis of long-time test, dielectric strength exceeding 400 volts per mil, for 5,000 volt services. Surge or impulse strength proportionately high.
3. Utmost resistance to corona and ozone cutting.
4. Low dielectric loss.
5. Exceptional electrical stability in water.

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Corette Heads Montana Power

Utility's top executive also fills general manager's post. C. J. Burns is elected a vice president

(Cover Story)

John E. Corette, Jr, has been named president and general manager of Montana Power Co. Corette, who has been advanced from the vice presidency, at 44 becomes one of the youngest utility heads in the country.

He succeeds Frank W. Bird, who has been appointed chairman of the board after serving the company as chief executive for more than 12 years.

C. J. Burns, assistant to the vice president, has been elevated to the post of vice president.

Native of Montana . . . The new Montana Power president is a native of Butte. Corette attended Montana State University and received a law degree from the University of Virginia in 1930. He was associated with the law firms of Murphy & Whitlock and Corette & Corette before becoming general counsel for Montana Power in 1934. Ten years later he was elected vice president and assistant general of the utility. In that post he has worked with Bird for the past eight years. He was made a director in 1948.

Corette also is vice president and managing director of the Canadian-Montana Pipeline Co and Canadian-Montana Gas Co, Ltd, wholly owned subsidiaries of Montana Power. He is a director and member of the executive committee of the National Association of Electric Companies.

Division Manager . . . Burns, who also is a native son of Montana, joined the utility in 1920 as a clerk in the service department. Later he was made sales manager of the Butte Division and in January, 1949, was named manager of the Bozeman Division. He returned to Butte as division manager in May, 1949, and in 1951 he was transferred to the general office as assistant to the vice president.

C. J. BURNS

Bird has been identified with the electric industry in Montana for more than 40 years and has been associated with Montana Power since its founding in 1912. He became vice president and a director in 1935 and was elected president and general manager in 1940.

•

John R. Ridgeway, Houston Lighting & Power Co, has been named chief of the Major Equipment Scheduling Branch of Defense Electric Power Administration. **Henry Hansjergen,** Cincinnati Gas & Electric Co, is the new chief of the Minor Requirements Branch. **John C. Morrissey,** Department of Defense, has been appointed associate general counsel.

James G. Rebeta has been appointed manager of advertising and sales promotion of General Electric Co's St. Louis (Mo.) office. He replaces James M. McGarry, who was named manager of the company's News Bureau at Schenectady (EW, July 7, p 30). Rebeta, who has been general manager of a graphic arts firm in Detroit for the past two years, was first associated with GE in 1935.

Dennis H. Lane has been made assistant treasurer of El Paso (Tex.) Electric Co. Lane, who has been with Stone & Webster Service Corp, New York, for the past four years, started with El Paso in 1928.

S. C. Leyland has been named manager of engineering for Westinghouse Electric Corp's Meter Division at Newark, N. J. Leyland, manager of the relay engineering section since 1941, came to Westinghouse in 1925.

J. H. Binger Named a VP of Minneapolis-Honeywell

James H. Binger has been made vice president of Minneapolis-Honeywell Regulator Co. He will make his headquarters at the company's executive offices at Minneapolis.

J. H. BINGER

Binger, formerly vice president and general manager of the firm's Belfield Valve Division, Philadelphia, joined Honeywell in 1943 as administrative assistant in the aeronautical division. In 1945 he was elected assistant secretary and two years later was appointed assistant vice president and transferred to the sales department. He held that position until he was named to the vice presidency in 1950.

Connect the service leads . . . plug in the meter . . .

That's all!

The STU Heavy-Duty Socket

There's no need to devise special metering facilities for heavy current applications when you use Westinghouse Transockets. All components are in place . . . complete with secondary wiring—ready for installation . . . all in a single package! Just connect the service leads, plug in the meter . . . that's all.

The STU High-Capacity Socket lets you utilize the full inherent capacity of Westinghouse 50 ampere meters, when installed on services using #4/0 wire. It's now available for polyphase as well as for single-phase applications.

The STS Transocket combines the socket and Type MR current transformers in one compact enclosure . . . handles heavy loads up to 400 amperes.

Both units are ready to install . . . inexpensively . . . easily . . . and take standard S-Type meters.

Here's real help! The Westinghouse "Meter Socket Selector," B-5284, makes it easy for you to select the proper socket for any application. It's 20 pages, fully illustrated, covering all types of service . . . all capacities. To get your copy, write: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-40426-A

you can be SURE . . . if it's

Westinghouse

METERS

PUBLIC RELATIONS & ADVERTISING

300,000th Meter Installed in Cincinnati

Cincinnati Gas & Electric Co has installed its 300,000th residential meter in the new, all-electric home of Mr and Mrs Alphonse Humbert on the outskirts of the city. The home was "light conditioned" through the efforts of the company's Home Lighting Division staff. The company installed its 100,000th residential service meter in May 1924 and its 200,000th meter in October 1935.

A. W. Hornikel, Rural Sales Department, and C. Menkhause, Electrical Distribution Department, are holding up the special meter for the admiration of Mrs Humbert and Fred J. Morr, Hamilton County commissioner.

Production for Freedom Boosters

Here is how various companies have announced that they will promote Production for Freedom Week:

Washington Water Power Co—The program will center around the opening of the Cabinet Gorge project. A celebration will be held at the damsite. Activities include a drawing contest for youngsters on the Production for Freedom theme, special radio programs, color films, a photographic contest, and the display of a working model of the Cabinet Gorge project.

West Penn Power Co—Company will work through the chambers of commerce in 24 communities, will provide speakers, and will stress the theme during "Pennsylvania Week."

Consolidated Gas, Electric Light & Power Co of Baltimore—Company will tell the story at the state fair and at the Association of Commerce BIE Day celebration.

Ohio Electric Utility Institute—An eight-page folder showing the rapid expansion of the industry in the state is being prepared for distribution.

Virginia Electric & Power Co—Newspaper advertisements will feature the 151% increase in capacity since 1946.

Connecticut Light & Power Co—Plans are under way to have a statewide activity under the auspices of the Manufacturers Association of Connecticut. The theme also will be tied in with the traveling exhibit of the Ford Museum (EW, June 16, p 101) "Industrial Progress, USA," which will be displayed in cooperation with other electric companies in the state.

Dayton Power & Light Co—Company will use the theme, "Do More with Electricity," in an advertising campaign in dailies. Many industries will have open house. A fairgrounds industrial show is being planned.

Monongahela Power Co—Programs will vary in local communities. An industrial fair and industry-business dinners are planned. Stores will use the theme for window displays. Civic clubs of every community are taking leadership, and open houses are planned by many industries.

Freedom Production Theater TV Schedule

Coming attractions on the television show, "Production for Freedom Theater," include:

July 27—"Speaking of Rubber." A grandfather tells his grandson the story of rubber beginning with the tapping of the tree and ending with the various products made from the rubber. This is a presentation of the United States Rubber Co.

Aug. 3—"Nerves of a Nation." Anaconda Copper Mining Co tells the story of the production of copper wire and cable and their usefulness in daily life.

Aug. 10—"Fifth Freedom." Allegheny Ludlum Steel Corp asserts the (fifth) freedom of opportunity whereby we profit by our own initiative has made possible the great advances in the steel industry and its allied fields.

Most American Broadcasting Co TV stations are carrying the half-hour program at 6 or 9:30 PM. Check local newspapers.

AD COPY THEMES

Arkansas Power & Light Co—Under a heading, "More Power . . . for More Industry," a series of pictures of company's power plants is used to show how company is expanding its facilities to serve new industrial plants (also pictured) which are locating in Arkansas.

Narragansett Electric Co—Electric light and power companies of New England are "keeping the balance in the years ahead." Illustration shows a power plant on a balance outweighing an outline map of New England.

Public Service Co of New Hampshire—"Your Electricity—Made in the Mountains or at the Seashore—is all the same to you!" is the head on an ad telling how electricity comes from 37 of the company's plants. "It doesn't matter to you," reads the ad, "because there's no difference in the electricity."

Northern States Power Co—"It's child's play to paint this way" is how the company advertises the use of paint sprayers for household painting.

1 GETTING READY for a trip to Louisiana Power & Light's northern division is G. C. Rawls, vice president in charge of operations

2 CLIMBING ABOARD plane are several members of Louisiana P&L staff making trip with Rawls to northern division headquarters

It saves time for key personnel on trips around the system

5 WAITING CAR at Monroe Airport is ready to transport Rawls and his party to northern division headquarters at West Monroe

6 JOURNEY COMPLETED, Rawls is back in New Orleans office before 5 p.m. Round trip and conference took less than nine hours

Company Plane Gets Plenty of Use

Louisiana Power & Light, after four years of experience, believes its twin-engine Beechcraft is a valuable tool

by **G. C. RAWLS,** vice president, Louisiana Power & Light Co

Four years of use have convinced Louisiana Power & Light Co that a company-owned airplane is an efficient and profitable tool of utility operation.

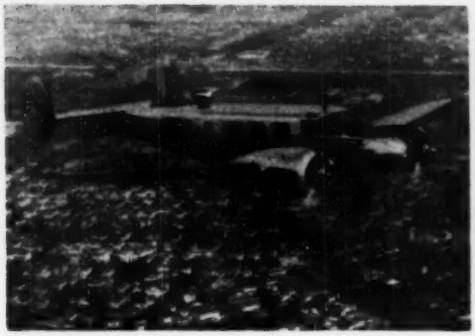
The main advantage the company derives from the plane is a saving of time and manpower. Although results are difficult to evaluate, the utility firmly believes the plane is paying its way and is helping to do a better job of rendering dependable service to its customers.

The decision to buy and operate a plane was made in spite of the fact that the corporation airplane was thought of as a "glamour girl" too often used as the personal vehicle of some executive and unable to justify its value.

Transportation Problem . . . About four years ago the company faced a serious transportation problem as a result of its rapid growth. Its service area had expanded some 400 miles north and south, from the Gulf of Mexico to the Arkansas border. In an eastward direction, the service area averaged about 150 miles in width. With an average of 14 customers per mile of line, none of the towns served has a population of more than 10,000.

Furnishing supervision for employees scattered over such a wide area presented numerous problems. Many of the company's key personnel were unable to find time to carry on their normal duties and simultaneously travel the distance involved. Other employees were losing valuable time in traveling to call on customers with operations located in the area but with general offices elsewhere.

Inadequate Facilities . . . Complicating matters was the lack of scheduled air line service from the center of the



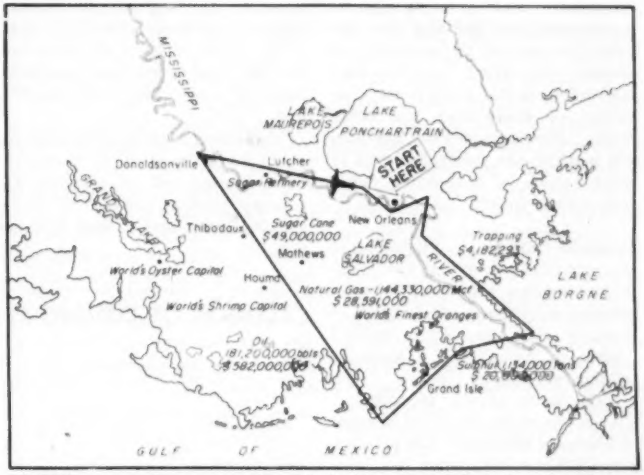
3 **HIGH ABOVE** residential section of New Orleans the twin-engine Beechcraft plane speeds on way to the Monroe Airport

4 **TWO-WAY-RADIO** system enables Ravis to make arrangements with company officials at West Monroe for transportation to office

and makes it easier to take industrial executives on tours

company's southern operations, where the general office is located, to the center of its northern operations. The distance involved is about 225 air line miles, but the highway distance is 280 miles. Lack of adequate rail facilities added to the difficulties, so auto transportation was used quite extensively by various members of the company, with some driving six, eight, or ten hours of the day when visiting the service area.

An airplane, Louisiana P&L officials decided, was the natural solution to the transportation problem. The company felt that to do an effective job, the plane would have to operate day or night, in any weather in which air lines could operate, should carry five or six passengers, and cruise at 180 mph or better. This dictated the use of a pilot and a co-pilot-mechanic as the operating conditions were felt to be too severe for the use of only one person in the crew.



AIR TOUR of its service area is conducted by Louisiana Power & Light for industrial executives to show them best locations for plant sites. The route followed is indicated on above map. The tours are part of the utility's program to encourage industrial development in its area

Beechcraft Selected . . . It was decided a twin-engine Beechcraft Model D-18-S would meet these requirements. This plane is all metal, has comfortable interior fittings, a range of 800-900 miles, is quiet, and is capable of carrying instrumentation and radio equipment for airline-type operation. In addition there is room for one of the company's mobile FM sets which permits communication with the utility's 53 fixed stations and 196 mobile stations.

Time Saver . . . Use of the plane has meant that a trip which formerly took seven or eight hours can be made in an hour and ten minutes. Personnel arrive fresh and relaxed at their destination and are able to be back in their offices before 5 p.m.

The plane is never used for extended trips. The company feels it cannot compete with modern air liners traveling at speeds of 300 mph on journeys of 1,000 miles or more. Nor is it used for line patrol work, photography, or other specialized tasks.

Industrial Tours . . . The only other use the plane has been put to is to take industrial executives on tours of Louisiana P&L's area to show them desirable locations for plant sites.

The company thinks it has a good thing. Out of its operating experience, it has compiled a list of "do's and dont's" for other power companies that might decide to go and do likewise:

1. Safety is the prime consideration.
2. Buy the best available aircraft in its class.
3. Don't economize on maintenance.
4. Don't treat the plane as a "glamour girl"; make it pay its way.
5. Hire a competent crew who will be responsible entirely for safe operation and availability of plane.
6. A spare engine is a good investment since it eliminates tying up of aircraft for three weeks for engine overhauls.

MEETINGS

Engineering Convocation Set

Fifty organizations will participate in Chicago celebration Sept. 3-13 marking the 100th anniversary of ASCE

The year 1952 marks the centennial of civilian engineering. To celebrate the occasion fifty engineering organizations will take part in a convocation to be held in Chicago Sept. 3-13.

The convocation was arranged by Centennial of Engineering, 1952. This corporation was born when the American Society of Civil Engineers made plans two years ago to celebrate its 100th anniversary in 1952. Since the society wanted to set its sights on a centennial year and also mark the 100th birthday of the separation of civilian engineering from military engineering in this country, the Centennial of Engineering was established. The corporation, therefore, will highlight the accomplishments of every branch of engineering rather than a single society.

Industrial Exhibits . . . Highlights of the centennial celebration will be industrial exhibits shown in Chicago's Museum of Science and Industry, a dramatic stage production entitled "Adam to Atom," and a series of technical meetings.

Participating in the 16 technical sessions will be the American Institute of Electrical Engineers. The society's Power Division will sponsor four symposiums Sept. 11.

"Progress and future trends in electric transmission" will be discussed by S. B. Crary, General Electric Co, I. W. Gross, American Gas & Electric Co, and C. F. Wagner, Westinghouse Electric Corp. Progress in the art of power generation will be dealt with by A. C. Montieth, vice president in charge of engineering for Westinghouse Electric, and A. A. Johnson, also of Westinghouse. Economic utilization of electric power equipment will be analyzed by Herman Halperin, Commonwealth Edison Co. Lightning as a hazard to power systems will be treated by K. B. McEachron, General Electric.

Quarles to Speak . . . At the AIEE luncheon scheduled for Sept. 11, at the Congress Hotel, Pres D. A. Quarles will speak on the organization of the engineering profession.

AIEE Industry Division will present a program after the luncheon. The technical program for Sept. 12 will be sponsored by the Communications Division and by the Basic Sciences and Electronics Division.

Centennial Day, scheduled for Sept. 10, will feature a luncheon at which the John Fritz Medal will be presented to Benjamin F. Fairless, president and chairman of U. S. Steel Co as the champion of the American free enterprise system and for notable industrial achievement in the production of steel.

The Hoover Medal for distinguished public service also will be presented. The recipient will be Clarence D. Howe, Canadian Minister of Trade and Commerce and Defense Production.

Sponsors of the medals are ASCE, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, and AIEE.

Other Participants . . . Other industry organizations participating in the centennial observance will be the Illuminating Engineering Society, ASME, American Society for Testing Materials, American Standards Association, and the American Welding Society.

About 500 engineers from Europe, Asia, and Latin America are expected to attend the convocation of engineers.

Officers of the centennial corporation are Major Lenox R. Lohr, president of Museum of Science and Industry, president; Carlton S. Proctor, president of ASCE, vice president; and Titus G. LeClair, Commonwealth Edison. E. L. Chandler is convocation manager.

To commemorate the centennial of engineering, an appropriate United States postage stamp will be issued on Sept. 6 bearing the shield of ASCE.

CALENDAR OF COMING EVENTS

Maryland Utilities Association
Cavalier Hotel, Virginia Beach, Va., Sept. 5-6.

Rocky Mountain Electrical League
Fall Convention, Colorado Hotel, Glenwood Springs, Colo., Sept. 7-10.

American Standards Association
National Standardization Conference in conjunction with Centennial of Engineering, Museum of Science-Industry, Chicago, Ill., Sept. 8-10; 34th Annual Meeting, Waldorf-Astoria Hotel, New York, Nov. 19.

American Society of Mechanical Engineers
Fall Meeting, Sheraton Hotel, Chicago, Ill., Sept. 9-11.

Illuminating Engineering Society
National Technical Conference, Edgewater Beach Hotel, Chicago, Ill., Sept. 8-12.

Instrument Society of America
7th National Instrument Conference-Exhibit, Cleveland Auditorium, Cleveland, Ohio, Sept. 8-12.

Edison Electric Institute
Accident Prevention Committee, Sheraton Hotel, Rochester, N. Y., Sept. 15-16; Prime Movers Committee, Roosevelt Hotel, New Orleans, La., Oct. 6-7; AEIC joint meeting, Meter-Service Committees, Mayflower Hotel, Washington, D. C., Oct. 6-8; Electrical Equipment Committee, Roosevelt Hotel, New York, Oct. 13-14; Transmission-Distribution Committee, Hotel Adolphus, Dallas, Tex., Oct. 22-24.

Pennsylvania Electric Association
Annual Meeting, William Penn Hotel, Pittsburgh, Pa., Sept. 16-17.

Northwest Public Power Association
Accounting Section, Congress Hotel, Portland, Ore., Sept. 18-19.

Public Information Program
Annual Workshop Conference, Edgewater Beach Hotel, Chicago, Ill., Sept. 18-19.

Public Utilities Association of the Virginias
Greenbrier Hotel, White Sulphur Springs, W. Va., Sept. 19-20.

Southeastern Electric Exchange
Fall Meeting, Engineering-Operation Section, Atlanta Biltmore Hotel, Atlanta, Ga., Sept. 25-26; Accounting Conference, Jung Hotel, New Orleans, La., Oct. 16-17; Sales Conference, Thomas Jefferson Hotel, Birmingham, Ala., Oct. 29-31.

Wisconsin Utilities Association
Convention of Technical-Sales Sections, Schroeder Hotel, Milwaukee, Wis., Oct. 1-3.

National Farm Electrification Conference
Statler Hotel, Detroit, Mich., Oct. 20-21.

***American Institute of Electrical Engineers**
Middle Eastern District Meeting, Commodore Perry Hotel, Toledo, Ohio, Oct. 28-30.

National Electrical Manufactures Association
Annual Meeting, Haddon Hall Hotel, Atlantic City, N. J., Nov. 10-13.

National Association of Railroad and Utilities Commissioners
Annual Meeting, Hotel Marion, Little Rock, Ark., Nov. 10-13.

*Addition this week.

SAM HOUSTON SERVICE CENTER is fifth of these units to be completed by Houston Lighting & Power Co

Lighting Flexibility For Demonstration Purposes

H. G. HRIVNATZ, Lighting Engineer, Houston Lighting & Power Company, Houston

Lighting is outstanding in Houston's most recently completed South Houston Service Center. It is the fifth of a series of such centers built by the company to meet demands created by the rapid growth in population and system load in the Houston, Texas, area.

Operating crews and personnel of the commercial engineering departments, of sufficient number to take care of the requirements of the area, are headquartered at each service center.

The main building has 29,500 sq ft which consists of an office section, and enclosed warehouse, a covered transformer section, and a maintenance shop. The second building has 7,500 sq ft and houses locker and rest rooms, garage and filling station.

The main part of the service center that the customer comes in contact with is the office area which comprises 8,430 sq ft. This area consists of an auditorium, a lobby, and several large and small offices. Each area is lighted with a different type of fixture, each made by a different manufacturer. The purpose here is to create the equivalent of a display floor so the commercial representatives can take a customer through the various building areas and show him different types of fixtures which may be suitable for his purpose.

Demonstration Lighting . . . In the auditorium, for example, several systems of lighting are shown. Cove elements were placed on three walls. They employ strips of 96-in., 425-MA slimline lamps. When this system of lighting is used by itself in the auditorium, it produces a soft illumination, sufficient for stage shows and speakers showing movies and lantern slides. If the auditorium is used for display purposes or for schools, a system of recessed incandescent troffers can be turned on. These units are two feet square and use 300w silver-bowl lamps, giving an indirect system of lighting. The cove helps to illuminate the ceiling which otherwise would be relatively dark when the troffer lights are used. A total level of illumination of approximately 45 ft-c is obtained throughout the main floor of the auditorium.

On the stage there is a system of recessed lights as well as a border strip

EIGHTEEN-INCH RLM DOME REFLECTORS burning 300w lamps light the warehouse

MODERN OFFICE LIGHTING of 50 ft-c is provided by four 96 in., 425 MA louvered slimline fixtures mounted against the ceiling

BUILDINGS ARE FLOODLIGHTED on all sides. These floodlights also provide illumination for material handling during emergencies at night

which is wired with four circuits controlling white, red, blue, and amber lamps. The stage also can receive additional highlighting by means of six recessed adjustable spotlight units using the PAR 150w flood lamp. These are mounted in the main auditorium ceiling directly in front of the stage.

Lighting in the lobby of the building is so designed that electrical merchandise can be displayed anywhere on the floor and still receive proper illumination. This is accomplished by two 96-in., 425-MA slimline troffers. This system will produce a general level of illumination of 40 ft-c. At the end of each row of troffers and between each fixture is a recessed PAR 150w floodlight unit. These are adjustable so that the display man can focus one to four units on any piece of merchandise.

The general office areas are illuminated with two-lamp and four-lamp fluorescent fixtures. Some of these are totally shielded and others are louvered units. With this combination of fixtures the commercial representative can show a customer a type of fixture that is best suited for a store or for an office.

In the garage and filling station building a lighting design has been worked out for illumination of a grease lift. This is one of the hardest lighting problems in a service station. It is believed that this installation will result in the sale of many service station lighting jobs of similar design. General lighting for the area employs 300w symmetrical angle reflectors and lens lighting with 200w units set in the lower section of the wall. These units project light upward under the car when it is up on the grease lift.

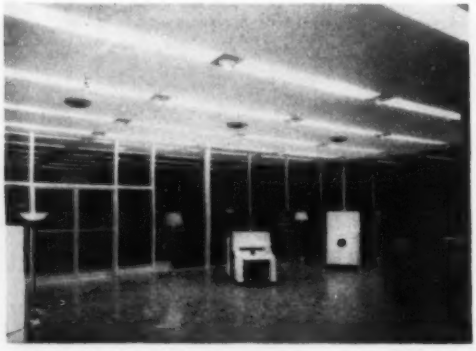
Lighting Controls . . . Floodlighting of the service area is done by units on low steel racks on the roof of the two buildings. These floodlights are so placed that a fairly even distribution of light is had on all driveways and on the pole yard. Floodlights are turned on and off by a controlling time clock.

Another panelboard and time clock controls the three cold cathode signs placed on the office building. The sign letters are 24 in. high by 3 in. wide, stripped with 15-mm tubing powered by 60-MA transformers with a maximum of 12,000 volts. These signs can be seen approximately a half mile down the highway.

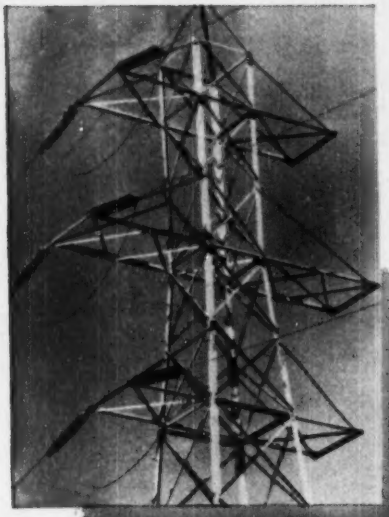
Control of the lighting circuits in the auditorium is in a group of five push-button stations operating a contactor that feeds a panelboard to which all lighting circuits are wired. There is a push-button station at each of four doors leading to the auditorium. The fifth station is in the wing of the stage. Lighting on the stage is controlled by individual switches. The auditorium will seat 200 people. It has an all-electric demonstration kitchen which is built against the back wall of the stage. This area can be closed off from the rest of the stage by opening up a set of modernfold doors.

Intercom System . . . All offices, as well as the maintenance shop, garage, and locker room are connected by means of a 22-pair cable feeding master intercommunication cabinets. From each it is possible to communicate with any other part of the building. Speakers are located at the loading dock, warehouse area, and pole yard so that calls can be made to individuals in these areas. This use of a P.A. system expedites certain office routine and requires the minimum in telephone service.

FLEXIBILITY is designed into 200-seat auditorium lighting. There is a slimline cove three walls. General lighting is from 300w silver bowl covers. Lighting intensity is 45 ft-c



RECESSED LOUVERED TROFFERS of two 96 in., 425 MA slimline lamps give the lobby an even level of illumination of 40 ft-c. Merchandise is highlighted with spotlights



No Jumper Splices
No Connector Troubles
No High Costs...

When You Build Lines With O-B HI-LITE STRAIN CLAMPS

Jumper loop splices in transmission circuits often prove unsatisfactory as permanent, low resistance connections. With O-B Hi-Lite clamps which permit stringing through strain points, you can eliminate these sources of potential trouble by using uncut conductor.

Since only a standard hand wrench, no special skill, and very little time are needed for installation, attractive savings can be made in construction costs. Once installed, these clamps may be inspected at any time for permanent tightness either by hand or by hot stick.

Economical installation applied to a basically low cost clamp enables you to build strain locations at a definite saving. Design of the O-B Hi-Lite strain clamp, utilizing continuous uncut conductor, keeps these strain points free of trouble. Cash in on these O-B Hi-Lite advantages when you plan construction of your next transmission line.

Ohio Brass

MANSFIELD • OHIO

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IN CANADA: CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

Meeting the Nation's Growing Power Load

Greater System Capacity through new and higher Breaker Ratings

Heavy-power concentrations and extensive system interconnections have created demands for circuit breakers with unprecedented characteristics and ratings. Yesterday 10,000,000 kva for 230,000 volts looked like the ultimate . . . today we are approaching 15,000,000 kva. Westinghouse has developed and already has installed other new and higher ratings for a wide range of voltages.

What's the meaning of these new ratings? Higher voltages will carry larger power blocks more economically. Higher interrupting capacity makes greater concentration of generation or of transmission lines at one location possible. With the same system stability, extra transmission lines and current-limiting reactors are eliminated.

Westinghouse started getting ready for these new interrupting peaks 27 years ago, when the High-Power Laboratory was created. The facts gained from thousands of short-circuit tests . . . proving ratings as high as 10,000,000 kva . . . have enabled us to reduce breaker operating time, size, and amount of equipment to do the job.

It's another example of Westinghouse thinking ahead. It's an awareness of all utility needs . . . keeping breaker capacity, for example, in step with system expansion, so that your investment in generating and transmission facilities can be protected. With the realization that America's power appetite is growing, marches our responsibility to build apparatus . . . that is more efficient, economical and reliable. J-97162

YOU CAN BE **SURE** . . . IF IT'S

Westinghouse

New ratings available

Since 1945 Westinghouse has developed the following new circuit breakers:

34.5 kv, 2,500,000 kva
69 kv, 3,500,000 kva
115 kv, 3,500,000 and 5,000,000 kva
138 kv, 5,000,000 and 10,000,000 kva
161 kv, 5,000,000 and 10,000,000 kva
230/196 kv, 10,000,000 kva

Westinghouse is the first company to build and have installed 161-kv, 10,000,000-kva breakers. 230-kv, 10,000,000-kva breakers already have several years of field experience. Westinghouse also will soon deliver a substantial number of 138-kv, 10,000,000-kva breakers.

Westinghouse also has converted existing breakers to ratings of 10,000,000 kva by changing to new interrupters . . . extending the useful life of present equipment.

New pneumatic mechanisms

Modern power requirements call for high-voltage circuit breakers capable of initial reclosure in 20 cycles or less. The newly developed Westinghouse pneumatic-operating mechanism combines high-speed reclosing with mechanically trip-free opening so that the breaker cannot be held closed after a tripping impulse has been given. Further, latches are reset so rapidly that subsequent reclosures are possible after intervals only a little longer than the initial reclosure.

New surge-tank development

High-current arcs manifest themselves as shock waves inside the tank. To reduce the impact on the bottom of the tank and the foundations, and to eliminate rebound, surge tanks are mounted in the breaker to absorb the shock. Here again, Westinghouse engineering development and testing make higher ratings possible.

Chronology of breaker developments

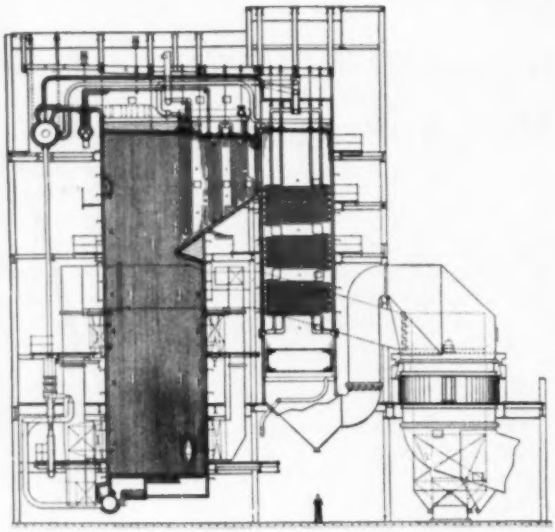
In 1930, the original "De-ion®" grid reduced breaker opening time from 30 cycles down to a new standard of 8 cycles. The Multi-flow grid in 1940 made higher ratings possible and reduced standard opening time to 5 cycles. The extension of the Multi-flow grid principle has resulted in smaller sizes, lower oil content and higher interrupting ratings, and faster opening times down to 3 cycles.

To learn how these new developments can help you, call your Westinghouse Electric Utility representative . . . or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

ETIWANDA STEAM STATION

Southern California Edison Company

C-E controlled circulation boilers



The C-E Unit shown above is one of two duplicate units now in process of fabrication for the Etiwanda Steam Station of the Southern California Edison Company at Etiwanda, California. Stone & Webster Engineering Corporation are the engineers and constructors.

Each of these units is designed to serve a 125,000 kw turbine-generator operating at a pressure of 1800 psi with a primary steam temperature of 1000 F, reheated to 1000 F.

These units are of the controlled-circulation, radiant type with a reheater section located between the primary and secondary superheater surfaces. An economizer section follows the rear superheater section and regenerative type air heaters follow the economizer surface.

Oil or natural gas firing is employed using tilting, tangential burners. The design provides for future conversion to pulverized coal when and if desired.

C-E

COMBUSTION ENGINEERING—SUPERHEATER, INC.

200 Madison Avenue, New York 16, N. Y.

B-591

ALL TYPES OF BOILERS, FURNACES, PULVERIZED FUEL SYSTEMS AND STOKERS; ALSO SUPERHEATERS, ECONOMIZERS AND AIR HEATERS

Alcoa, Union Agree on Contract

Five-year pact, covering six of the company's plants, contains a cost-of-living escalator clause

Aluminum Co of America and the International Council of Aluminum Workers of America, AFL, announced jointly the completion of negotiations for a five-year contract covering 9,500 workers at six of the Alcoa plants.

The new pact contains a cost-of-living escalator clause, a feature new to the aluminum industry wage agreements. Plants affected are located at Cressona, Pa.; Chillicothe, Ohio; Davenport, Iowa; East St. Louis, Ill.; Lafayette, Ind.; and Massena, N. Y.

Government Approval Necessary . . . Because the contract's money features must be approved by various government agencies and boards before they can go into effect, the new contract must be in the nature of an interim agreement.

The contract's main provisions are:

1. A 10% general wage increase, effective 3½ months prior to the date of the agreement, which was July 1.

2. A continuation of the maintenance of membership clause contained for the past several years in contracts between Alcoa and the aluminum workers.

3. The new feature is a plan which calls for an annual wage increase of 4¢ per hour for each year of the five-year contract, in addition to a quarterly adjustment of wages based on the Commodity Price Index (cost-of-living index). This first 4¢ annual increase will be made effective July 1, 1952. If the index should rise to 200 by July 1, 1953, 1¢ per hour will be added to the second annual increase and will be maintained in the annual increases for the remainder of the five-year contract. If, on the other hand, the index does not maintain a certain upward trend, the wage contract may be reopened by 30 days' notice of either party.

4. Paid vacation allowances are increased from three weeks after 25 years' service to three weeks after 15 years.

5. Shift premiums are increased from 4 to 6¢ on the afternoon shift and from 6 to 9¢ on the third shift.

6. Insurance benefits call for $30 per week for 26 weeks, as compared with the previous $26 for 26 weeks for non-occupational sickness and accidents.

7. Hospitalization benefits increase from the previous board and room allowance of $8.50 to $10 per day.

The contract covering fringe issues is a two-year agreement which may be opened on July 1, 1954.

First Major Contract . . . Completion of these negotiations represents the first major contract consummated during current negotiations between Alcoa and the various unions with which it bargains.

The AFL unions involved in this contract and the CIO Steelworkers which are the bargaining agency in certain other plants of the company have both had a case before the Wage Stabilization Board; however, no action has been taken by the Board with respect to either of these disputed cases.

Con Edison Mails Report to 28,000 Employees

Consolidated Edison Co of New York has mailed to its 28,000 employees a report of the company's business during the last year. Titled "Con Edison in 1951," this report is the latest of a series which began 13 years ago with "Our Company and Our Business in 1938."

This new issue of the annual report to employees presents graphically the problems of an expanding business which has to sell its products at a fixed price in an inflationary economy. It points out that of every $100 of additional Con Edison revenue in 1951 only two cents was left for profit. The rest went for taxes and the increased cost of doing business.

A section devoted to employee benefits provided a break-down of the $25 million spent by Con Edison in that direction in 1951. This amounted to a company cost of $16.84 a week for each employee.

Other pages present a ten-year review of the progress of company business, the traditional pie-charts showing the relative slices of the incoming and outgoing dollar and a detailed classification of Con Edison's 160,000 stockholders.

If you are interested in receiving a copy write: John C. Arnell, senior assistant personnel director, Consolidated Edison Co of New York, 4 Irving Place, New York, N. Y.

LABOR BRIEFS

Wage Increases—Southwest Regional Wage Stabilization Board has approved 2.2% general wage increase for Dallas Power & Light Co workers. The board's vote was 4-to-2 . . . Ohio Power Co has announced a 6½% wage hike to all non-union employees, effective July 1, and has offered a similar wage increase to union-represented employees in its various operating divisions. The increase offered union employees would be effective August 1, subject to their ratification. The increases are subject to approval by WSB. A similar wage boost was granted July 1 to union employees of Utility Workers Union of America, CIO, at Philo, Tidd, and Windsor power plants (EW, June 30, p 53).

At a Senate Labor subcommittee hearing on whether legislation is needed to deal with Communist-controlled labor unions, L. R. Boulware, vice president in charge of employee relations, General Electric Co, has recommended that Congress create an independent government agency to seek out and publicly identify any Communists or their agents in labor unions and impose penalties on unions designated by the government as Communist-run. Earlier, James B. Carey, president, International Union of Electrical, Radio and Machine Workers, CIO, argued that legislation was both "unnecessary and unwise." CIO Pres Philip Murray also has supported this position.

Congratulations—Evan B. Strauss, formerly personnel director for Jersey Central Power & Light Co, has been advanced to the position of manager of employee relations. J. Warren Frazee has been made personnel director . . . Willard L. Male has been made manager of union relations for General Electric Co's Tube Dept.

Public Utilities Rank Second . . .

. . . in number of common and preferred share owners, Brookings Institute survey shows. Manufacturing industry is first

Public utilities as a group ranked second in the number of common and preferred shareholders, a 140-page survey by the Brookings Institution, Washington, D. C., revealed recently. This group was exceeded only by manufacturing. The study was entitled "Share Ownership in the United States" and was prepared at the request of the New York Stock Exchange. The public utilities included electric and gas, communications, gas and miscellaneous companies.

Common Stock . . . Public utility companies had 219 common stocks in the tabulation with shareholdings of 4,066,500, comprising 22% of the total, as follows:

No. of Shares	No. of Holders
1 to 99	3,067,700
100 to 999	958,900
1,000 and over	39,900
	4,066,500

This was only exceeded by the manufacturing group which had shareholdings of 7,384,100, around 40% of the total of 18.5 million.

Electric and gas share owners which were included in the public utility group totaled 2,223,700, or 12% of the total for all corporations, as follows:

No. of Shares	No. of Holders
1 to 99	1,536,700
100 to 999	660,900
1,000 and over	26,100
	2,223,700

The average electric and gas shareholding amounted to 134.0 shares with the average value per share owner of $3,355 compared with 190.7 shares and $6.594 reported for all corporations.

Preferred Stock . . . Public utilities also ranked second in preferred stock held by share owners. They had 259 issues with shareholdings of 668,300, roughly 37% of the total, as follows:

No. of Shares	No. of Holders
1 to 99	555,000
100 to 999	107,100
1,000 and over	6,200
	668,300

Included in this group were electric and gas companies which showed 178 issues with shareholdings of 584,302 with an average of 89.7 shares per holder. A total of 487,681 share owners held 1 to 99 shares; 91,288 held 100 to 999 shares; and 5,333 held 1,000 shares and over.

The survey pointed out that the proportion for public utilities, amounting to 30%, is well above the comparable figure for the common stocks of this group. Public utility companies employ this medium of financing to a much greater extent than most other types of business. This is particularly true, the report continued, of the electric power and gas companies.

Common and Preferred Combined . . . The public utilites group ranked second among the major groups in number of common and preferred share owners with 4.7 million, or about 23% of the total. Manufacturing was first with 8.2 million and 40% of the total. Public utilities' shareholdings amounted to an average of 112.1 shares per share owner compared with 181.8 shares for all corporations.

Electric and gas companies had a total of 298 issues with 2,807,900 share owners holding an average of 124.8 shares each.

Wisconsin Utilities to Set Expansion Record in '52

Utility companies serving more than three million people in Wisconsin with electric, gas, and transportation service will spend approximately $83.9 million in 1952 to extend, improve and maintain their services, according to a statewide survey recently completed by the Wisconsin Utilities Association.

This expenditure will set an all-time construction and expansion record, exceeding the previous mark by $21 million.

Of the 1952 expenditure, electric will amount to $68.1 million and gas $13.8 million of the $83.9 million to be spent. The balance will be for additions to electric railway and bus, heating and water services.

The breakdown of the electric will be as follows:

Generating Stations	
Steam	$26,347,395
Hydro	3,326,167
Internal Combustion	8,000
Total Generating Stations	**$29,681,562**
Transmission	13,521,434
Distribution	21,290,522
Miscellaneous	3,618,083
Total Electric Plant	**$68,111,601**

The survey showed that the total electric generating capacity of these Wisconsin companies at Dec. 31, 1951 was 1,803,121 kw of which 1,464,650 kw was steam, 320,361 kw hydro, and 18,110 kw internal combustion.

The generating capacity to be added in 1952, 1953, and 1954 will total 435,150 kw of which 45,150 kw (32,650 kw steam and 12,500 kw hydro) will be added in 1952, 210,000 kw steam in 1953, and 180,000 kw steam in 1954.

High Purchase Price Held No Basis for Rate Boost

Speculation in private utilities was dealt a blow in Arizona in June when the Corporation Commission denied an application for water utility rate increases in a Tucson suburb.

The utility based rates on a speculative purchase price of $77,500. The commission, in denying the application, established the fair value of the company at $47,185. On this basis, it claimed, the company already is earning a fair profit.

The ruling held that the fair value must be based in part upon the original cost less depreciation as against a previous unofficial policy of basing rates upon purchase price regardless of original cost.

Hawaiian Electric Asks 1st Rate Hike in 30 Years

Hawaiian Electric Co has filed for its first rate increase in 30 years, a 12% boost to meet extra costs of operation and clear the way for a $23-million expansion program.

The company has estimated the increased rates will add $1.5 million a year to its gross revenues.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1952									
July 10	**2.98**	**3.00**	**3.10**	**4.07**	**4.27**	**4.61**	**5.43**	**5.90**	**6.34**
July 3	2.96	3.00	3.09	4.07	4.28	4.60	5.36	5.79	6.35
2nd 1952	2.95	3.00	3.09	4.05	4.31	4.60	5.38	5.85	6.42
1st 1952	2.95	2.99	3.13	4.11	4.29	4.66	5.35	6.03	6.47
4th 1951	3.02	3.07	3.21	4.32	4.50	4.91	5.42	6.18	6.84
3rd 1951	2.87	2.91	3.04	4.05	4.27	4.61	5.52	6.24	7.05

Data: Reis & Chandler, Inc.

EARNINGS

Company	Months Ended		Net Income 1952	Net Income 1951	Earnings Per Common Share 1952	Earnings Per Common Share 1951
American & Foreign Power, consolidated	12	Mar.	$13,962,176	$18,229,724	$1.95	$2.55(b)
El Paso Electric	12	May	1,461,592	1,407,288	1.82	1.75
Iowa Electric Light & Power	12	May	1,965,134(a)	2,090,444	1.46	1.57
Monongahela Power	12	April	4,973,828	4,435,619	....	....
Potomac Edison	12	April	3,443,430	3,390,333	....	....
San Diego Gas & Electric	12	May	4,111,815	3,489,228	1.33	1.14
			1951	**1950**	**1951**	**1950**
Arkansas Power & Light	12	Dec.	$4,668,327	$4,117,997	$....	$....

Notes—The figures for the last company have been audited; (a) Includes revenues of former Central States Electric properties since Aug. 16, 1951; (b) Based on present stock outstanding; and (c) Based on 527,865 shares in 1952 and 133,705 shares in 1951.

FINANCING

Company and Description	Amount of Offering ($000)	Offering Price	Yield to Public
WEEK OF JULY 10-16			
Bonds			
Commonwealth Edison—1st mtg 3¼% 1982	$40,000	101.93	3.15%
Knoxville, Tenn., electric revenues 1956-1972	1,250	various	1.50-2.17
Preferred Stock			
Public Service Co of New Hampshire—50,000 sh 5.40% $100 par	5,000	$102.85	(a)5.25%
Common Stock			
Southern Co—1,004,510 sh (being offered to commonholders on 1-for-16 basis, record June 19 to expire July 10)	$12,808	$12.75	6.27%
Florida Power Corp—309,360 sh (being offered commonholders on 1-for-5 basis, record June 30 to expire July 16)	6,187	20.00	6.00
WEEK OF JULY 17-23			
Preferred Stock			
Gulf States Utilities—50,000 sh $100 par	$5,000	.....	.....
Common Stock			
General Public Utilities—531,949 sh (being offered commonholders on 1-for-15 basis, record July 1 to expire July 23; additional stock to carry 35¢ dividend payable Aug. 15)	11,171	$21.00	6.67%
SCHEDULED FOR JULY-AUGUST-SEPTEMBER			
Bonds			**Bid Date**
Pennsylvania Electric—1st mtg 1982	$9,500	.....	Aug. 5
Seattle, Wash., municipal light and revenue 1970-1987	25,000	.....	Aug. 5
Arkansas Power & Light—1st mtg 1982	15,000	.....	Sept. 9
Preferred Stock			
Pennsylvania Power & Light—100,00 sh $100 par	$10,000	.....	(b)July 29
Pennsylvania Electric—45,000 sh $100 par	4,500	.....	Aug. 5
Common Stock			
Mountain States Power—20,000 sh	.....	.....	Aug. 11
UNSCHEDULED AND UNDER CONSIDERATION			
Bonds			
Washington Water Power—1st mtg 1982	$25,000	.....	.....
Virginia Electric & Power—1st mtg 1982	20,000	.....	.....
California Oregon Power—1st mtg 1982	7,000	.....	.....
New Orleans Public Service—1st mtg 1982	7,000	.....	.....
Preferred Stock			
Cleveland Electric Illuminating—100,000 sh $100 par	$10,000	.....	.....
Common Stock			
California Electric Power—354,610 sh	.....	.....	.....
California Oregon Power—250,000 sh	.....	.....	.....

Notes—(a) Company rejected a competitive bid of 100.02 for 5.60% dividend rate by Kidder, Peabody & Co—Blyth & Co group. Company made a negotiated deal with R. W. Pressprich & Co and Spencer Trask & Co group, underwriters at 100.20 for a 5.40% dividend rate. The stock was reoffered to the public on a 5.25% basis by the underwriters who announced it was oversubscribed and the books closed; and (b) First Boston-Drexel & Co group, underwriters.

FINANCIAL BRIEFS

Central & South West Corp will pay Aug. 20 a common dividend of 25¢ a share versus 22½¢ in previous quarters . . . Securities and Exchange Commission has set hearings for July 24, upon Step I of the plan filed by **Standard Gas & Electric Co** designed to effectuate compliance with the Holding Company Act (EW, July 14, p 120) . . . Blyth & Co has made a secondary offering of 65,000 common shares of Ohio Edison Co at 34½ . . . **Portland General Electric Co** has sold privately $4 million first mortgage bonds, 3½% due 1977, through Blyth & Co.

Stockholder Subscriptions — Public Service Co of New Mexico stockholders subscribed to 165,366 common shares of 173,136 shares offered on 1-for-7 basis at $8 per share . . . **Houston Lighting & Power Co** stockholders subscribed to $13,961,350 of 3¼% convertible debentures due 1967 of $14,258,650 which were offered to commonholders on the basis of $50 principal amount of such debentures for each 16⅔ shares held; balance $297,300 were sold to an institution by Halsey Stuart & Co and Underwood, Neuhaus & Co.

Citizens Utilities Co will pay Aug. 20 a semi-annual common stock dividend of 18¢ a share and a stock dividend of 3 shares of common for every 100 shares held. Common stock was split 3-for-1 on May 15, thus making the present declaration equal to 54¢ a share on the old stock. The previous payment on the old stock was 45¢ a share semi-annually.

Florida Power & Light Co has taken over the Boca Grande power system . . . **Los Angeles, Calif., Department of Water and Power** has adopted a $139.1 million construction budget for the fiscal year starting July 1.

REGULATION

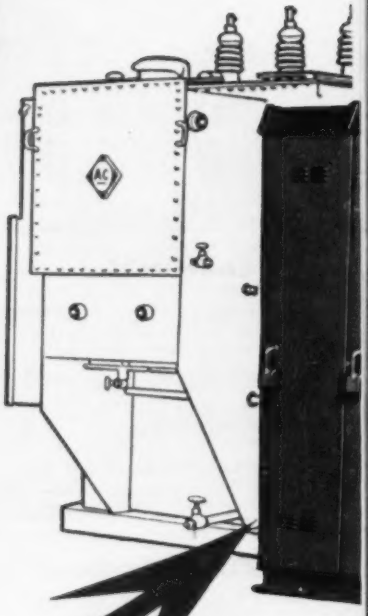
Georgia Public Service Commission has recessed until Aug. 4 the $4.6 million rate increase case on Georgia Power Co.

Owatonna, Minn., Public Utilities has announced a reduction in rates amounting to 20% for the average residential consumer.

MULTI-CIRCUIT

Unit Substations

Are Easy to Double-End



Now You Can Install A-C Unit Substations That Are Planned for Easy Future Double-Ending Without Service Interruption!

WHEN LOAD GROWTH demands additional power, or when you want the added reliability of two transformers, the Allis-Chalmers Unit Substations you install today will be easy to double-end.

Your line crew will find all mechanical and electrical connections easy to make . . . the transformer throat and switchgear bus easy to align. That's because sufficient mechanical flexibility is built into the throat to permit realistic tolerances in concrete base construction.

Design Aids Quick Field Assembly

Pre-drilled bus extensions are accessible and flexible enough to be consistent with throat construction. There are no compound-filled joints requiring melting, chipping, cracking, or scraping. Just apply no-corona tape and insulating tape to finish the job.

Double-ending is easy also in terms of system operation. When planned from the initial installation, double-ending can be accomplished with no interruption in power service to your customers. Even on substations not planned initially for double-ending, the job can be done with minimum outage.

Because Allis-Chalmers Unit Substations are designed to grow with your system, they are a convenient answer to the growing distribution problem . . . to the ever-increasing demand for power and yet more power. They are simple to specify, neat and modern in appearance, and easy to expand.

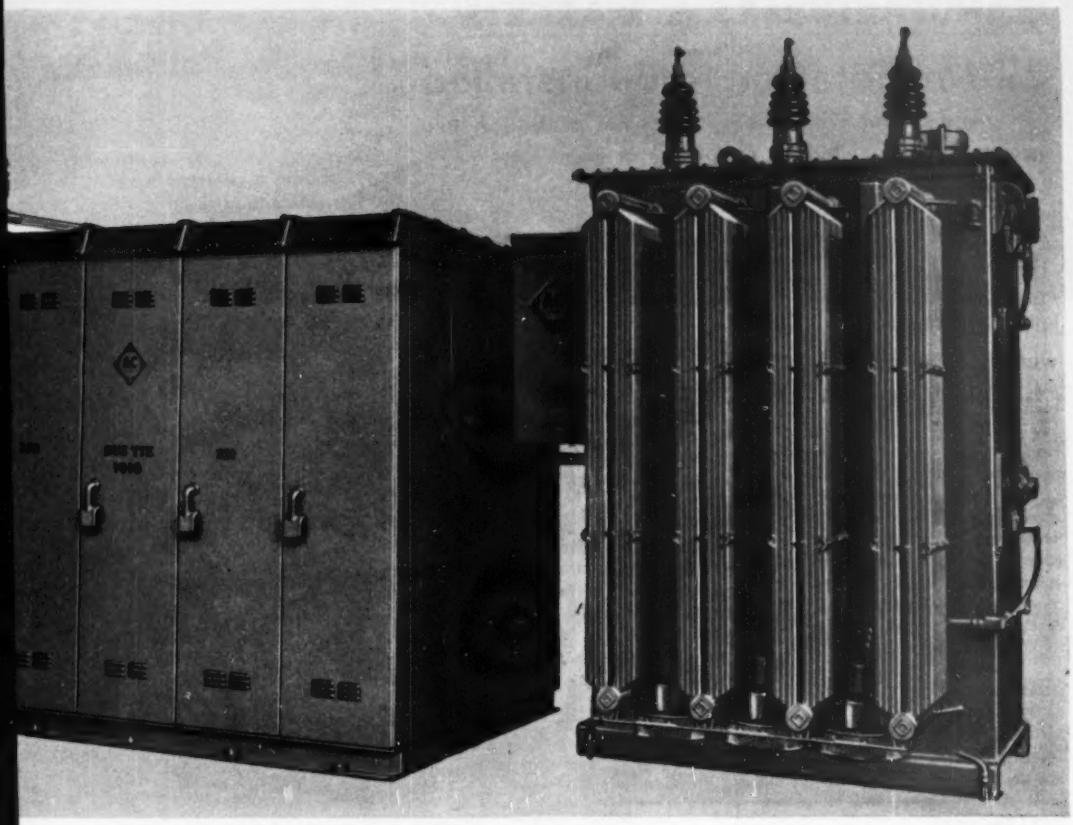
You Save These Five Ways:

(1) Original equipment cost is low; (2) compact construction reduces space requirements and real estate costs; (3) pre-wired unit design speeds installation; (4) maintenance is quick and economical because of improved accessibility; and (5) you purchase only the equipment you need *now*, deferring additional expenses until load growth demands the expenditure.

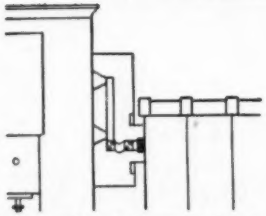
For the full story on what Allis-Chalmers Unit Substations can mean in your distribution system, call your nearby A-C representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-5729

ALLIS-

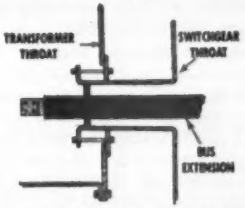


Here's Why It's Easy to Double-End MCS's



1 THE THROAT OPENINGS of all substation transformers, regardless of rating, are the same height as switchgear throat opening. This standardized throat location permits easy addition of a new transformer to the switchgear end of an installed Allis-Chalmers Unit Substation . . . simplifies and speeds field assembly.

2 FEEDER UNITS are jig built so that each feeder cubicle is exactly like every other one. Bus extension openings, control wiring openings . . . even small screw holes . . . are pre-cut in jigs. This careful, uniform construction makes addition of a main breaker easy . . . assures easy alignment of the new transformer.



3 MECHANICAL AND ELECTRICAL connectors and transformer throat are flexible enough to compensate for minor irregularities in concrete surfaces. Silver-plated, pre-drilled bus extensions are easy to bolt together. No-corona tape and insulating tape finish the joint.

CHALMERS

A-C ALLIS-CHALMERS

22-Mv Betatron to Be Installed

Allis-Chalmers' high-voltage unit will be housed in a concrete building slated for completion in mid-August

Allis-Chalmers Manufacturing Co expects to complete a new concrete building at its West Allis (Wis.) Works in mid-August to house a 22 million-v betatron for use in inspecting large steam turbine, centrifugal pump, and hydraulic turbine parts.

Walls 6 Ft Thick . . . The new building, which is 86 ft x 74 ft, has steel reinforced concrete walls 6 ft thick and 20 ft high to shield personnel from betatron radiation. The x-ray room is large enough to accommodate a railroad car. A Harnischfeger bridge crane capable of handling 25 tons will be used for lifting the specimens. The building also has a control room with operating panels and circuits, a darkroom with a dual set of stainless steel developing tanks, and a viewing room for inspection of radiographs.

Rotatable Beam . . . The betatron will be mounted on a crane which will permit the beam to be rotated through 180 deg about the horizontal axis and 360 deg about the vertical axis of the focal spot. Castings will be placed below the unit.

Since 1948 Allis-Chalmers has had a 22 million-v betatron in a smaller building at West Allis. This betatron has a fixed beam instead of the rotatable beam. It was used in experimental and test work and radiography and can now be used exclusively for betatron development and also test work.

For effective inspection of steel sections from 1 in. to about 24 in. thick, the 22 million-v betatron can be used. For thicknesses of less than an inch, the conventional 220,000-v x-ray machine is more efficient.

4-In. Limit . . . Allis-Chalmers' industrial x-raying facilities include a 220,000-v and a 400,000-v machine. With this equipment the maximum thickness of iron or steel that can be comprehensively examined for hidden flaws is about 3½ in. These machines, however, have not been adequate for inspection of many castings with sections more than 4 in. thick.

By late spring of 1953, the company will have built 24 betatrons ranging in voltage from 20 to 24 million. Allis-Chalmers' betatrons, which have been in production since 1944, are used in industry, medicine, and research.

Refined Copper Stocks Decrease During May

Stocks of refined copper held in the United States by members of the Copper Institute, Inc, at the end of May amounted to 55,351 tons, a decrease of 5,872 tons below the 61,223 tons held on April 30.

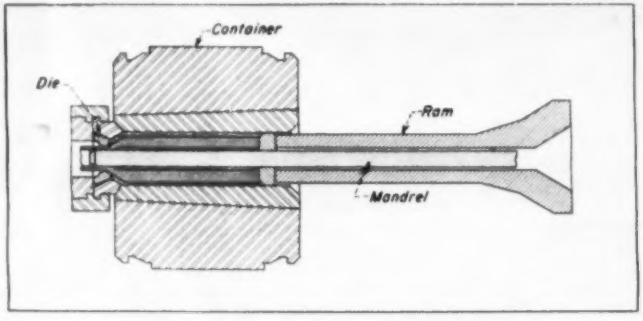
During May deliveries to domestic fabricators dropped to 105,362 tons compared with deliveries of 107,355 in April. Refined production decreased to 97,593 tons from 98,402 tons a month earlier.

Outside the United States refined stocks totaled 176,772 tons on May 31, an increase of 11,277 tons over the 165,495 tons on April 30. May deliveries dropped to 91,547 tons from 92,391 in April and refined production for the month of May was 109,673 tons compared with April's 106,689.

Minneapolis-Honeywell Plans Instrument Parley

Minneapolis-Honeywell Regulator Co will hold the third annual seminar in industrial instrumentation for professors of engineering Aug. 18-22 in its training school located at Philadelphia.

The five-day program is designed to familiarize the faculty of engineering schools with recent advancements in industrial processes and development of automatic instrumentation. The program also will include discussions of mutual problems of engineering colleges and the instrument industry.



French Extrusion Method Is Used

Drawing shows how tubing is extruded by the French "Ugine-Sejournet" hot extrusion process at the facilities of Babcock & Wilcox Co's Tubular Products Division, Beaver Falls, Pa.

Most significant discovery of the process is substitution of glass for carbonaceous materials previously used as a lubricant. The glass, melting on contact with hot steel, prevents seizing of billet and tools, insulates tools from the heat of the billet, and makes it possible to increase billet length. When extruding tubing, a hollow billet is confined in a container between the ram of the press and the die. Extending from the ram is a mandrel which passes through the billet and the die. As the ram moves forward the metal is squeezed out between die and mandrel with the die determining external contour and the mandrel the internal contour.

Actual extrusion takes place in from two to four seconds, yielding a piece from 20 to 60 ft long depending on the size of billet and the area of the extruded section.

HOW SAFE

CAN YOUR LINEMEN BE?

All-over Protection

Your linemen are no safer than their equipment makes them. For surer protection, provide them with Salisbury rubber line hose, insulator hoods, protective blankets . . . rubber coats, gloves, and sleeves. Graybar has distributed these and other Salisbury safety accessories for many years. Linemen trust them.

HOT-LINE TOOLS

Graybar offers Chance hot-line maintenance tools individually or in complete sets. They incorporate the latest developments in equipment for repairing energized lines. Metal fittings are lightweight, strong, heat-treated aluminum alloy. Poles are laminated spruce. We can provide you with specialized tools of various types for performing all hot-line jobs safely and efficiently.

First for First-aid

Linemen's first-aid kits must be weatherproof, dustproof, easy to handle, and complete in the supplies they might need. That's why the M.S.A. kits available from Graybar are favorites. In addition to 10-unit and 24-unit all-weather kits, Graybar distributes pocket-size M.S.A. first-aid packets.

ALL YOUR POLE-LINE NEEDS

Your near-by Graybar warehouse is a convenient source of pole-line materials and supplies. You can rely on the local Graybar Representative to provide complete, accurate information about anything you require, as well as to arrange practical delivery schedules for items in short supply.

For special help on any problem "from the bottom of the hole to the top of the pole", talk with a Graybar Outside Construction Specialist. *Graybar Electric Company, Inc. Executive offices: Graybar Building, New York 17, N. Y.*

IN OVER 100 PRINCIPAL CITIES

MANUFACTURING BRIEFS

Anaconda Wire & Cable Co has created a new Research Department to include the Engineering Laboratories at Hastings, N. Y., the Magnet Wire Research Laboratory, Muskegon, Mich., and the Rubber Products Development Laboratory, Marion, Ind. H. E. Thompson, formerly manager of quality control is the new director of the department.

Philco Corp has converted its Sandusky, Ohio, plant facilities to manufacture home and automobile radio sets. The plant formerly produced television sets.

General Electric Co has supplied Kaiser Aluminum & Chemical Corp's Chalmette plant near New Orleans with equipment totaling $8 million, bringing the total value of GE apparatus in the plant to $21 million. The new units include nine steam turbines capable of producing 180,000 kw, power distribution equipment, and auxiliary motors.

Nife, Inc, manufacturer of alkaline nickel cadmium storage batteries, has moved from its New York location to Copiague, Long Island, N. Y. The plant is located at Strong Ave. and 3rd St.

Line Material Co has opened a new Southeastern office and warehouse on Pitcher St., N. W., Atlanta, Ga., to serve as a distribution center for the entire area. B. C. Hunt is division manager.

SALES ASSIGNMENTS

COMPANY STAFFS

Copperweld Steel Co's Wire and Cable Division has named L. E. McGuire Pacific Northwest district manager with headquarters in the Vance Building, Seattle, Wash. McGuire, who has been Copperweld's district manager at Memphis, Tenn., will be responsible for sales operations in Washington, Oregon, Idaho, Utah, and the western section of Montana. Harry J. Billica, who formerly handled the Pacific Coast territory, will continue as district manager at San Francisco and also will handle operations in Nevada and Arizona.

Worthington Corp, Harrison, N. J., has appointed Paul J. Foley manager of its Kansas City office and William M. Fine manager of its Milwaukee branch office. Foley, who joined Worthington in 1937, formerly was manager of the firm's Milwaukee office. Fine previously served with the sales force of Worthington's Chicago office.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

California — Bureau Reclamation, Dpt. Interior Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Roseville, one main control board; one graphic and auxiliary control board for Folsom Power Plant, American River Div., Folsom Unit, Central Valley Proj., Inv. No. DS-3746.

Del., Wilmington—Civil Aeronautics Admin., Dpt. Commerce, Federal Bldg., New York International Airport, Jamaica, N. Y. Install standby power feeder and construct glide path unit, misc. work at New Castle County Airport, Proposal No. 152-2134B1.

Ga., Macon—U. S. Eng., Post Office Bldg., Savannah, electric distr. sys., Robins Air Force Base, Eng. 09-133-52-99.

Ind., Indianapolis—Universal Broadcasting Co., 1440 N. Meridian St., television station of 316,000 watts radiated power and tower and transmitter with 1,000 ft. antenna, Post Rd. south of Washington St. $1,000,000.

Iowa—Monona County Rural Electric Co-operative, Onawa, 32 mi. rural distr. line and sys. imprvs., Monona Co. $190,000.

Ky., Ford—East Kentucky Rural Co-operative Corp., Winchester, Dale Power Generating Station, Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engrs.

Me., Limestone—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., transmitter and receiver bldgs., Limestone Air Force Base, ENG 19-016-52-78, $500,000.

Md., Annapolis—P. Wks. Office, U. S. Naval Academy, Annapolis, electrical duct sys., switching station, telemetering etc. for proposed transmitter bldg., U. S. Naval Radio Station, Spec. 31662. Plans deposit $10.

Mass., Bedford—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., substation switchgear and transformers, Cambridge Research Laboratory, ENG 19-016-52-87.

North Dakota—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., radio communication equip. and coaxial cable for Missouri-Souris Dist., Missouri River Basin Proj. Inv. Mo. DS 3695.

Ohio—Ohio Edison Co., 47 N. Main St., Akron, transmission line from Springfield to Marion, $2,048,000.

O., Dayton—Base Contg. Officer EWB, Bldg. 56, (Area B), Wright Patterson Air Force Base, Dayton, addnl. electrical facilities Areas "A and C" at Wright-Patterson Air Force Base (IFB) 33-601-52-206.

O., Dayton—U. S. Eng., 820 West Broadway, Louisville 3, Ky., 2 story, 48x122 ft. with single story wings approx. 10x48 ft. and 21x26 ft. radiological instrument test bldg., Wright-Patterson Air Force Base, Serial No. ENG 18-029-53-1. Plans deposit $15.

Pa., Phila.—U. S. Eng., 121 N. Broad St., Zone 1, construct X-Ray laboratory and repair shop at plant of E. G. Budd Co., south of Roberts Ave. between Fox and Henry Aves., Inv. No. Eng 36-109-53-3. Plans deposit $10.

South Carolina—Aiken Electric Co-operative, Aiken, 250 mi. rural distr. line and sys. imprvs., Aiken Co. $770,000.

Texas—Deaf Smith County Electric Co-operative, Hereford, 91 mi. rural distr. lines, Deaf Smith and Castro Counties. $118,000.

Wash., Seattle—Civil Aeronautics Admin., Exchange Bldg., Zone 4, radar facility at Seattle-Tacoma International Airport, Proposal 752-9433.

Washington—Bonneville Power Admin., 827 N. E. Oregon St., Portland, Ore., Chehalis sub-station addn., Inv. 6592. Plans deposit $25. L. C. Stewart, c/o owner, engr.

Wash., Seattle—City, County City Bldg., Zone 4, city light sub-station in Duwamish Dist. with 2.4 mi. double-circuit 220 kv transmission line, $6,500,000, E. B. Hoffman, city light supt.

Low Bidders & Contracts Awarded

Calif., Vallejo—George F. Brayer & Severin Electric Co., 286 12th St., San Francisco, Calif., LB $839,000, modernize electrical sys. at Mare Island, NOY 72389, Spec. 34585, P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids June 18.

Nebraska—Knox Constr. Co., Oakdale, Neb., CA. $207,595, 145.67 mi. rural distr. lines, Thurston, Dixon and Dakota Counties, Northeast Nebraska Rural Public Power Dist., Emerson, Neb. Bids June 5.

N. M., Artesia—J. F. Pritchard Co., 727 Natl. Bank of Tulsa Bldg., Tulsa, Okla., CA. Approx. $7,500,000. Electric power generating plant, Southwestern Public Service Co., 3 and Polk Sts., Amarillo, Tex., E. W. Robinson, c/o owner, engr.

N. M., LasCruces—C. H. Leavell & Co., 1900 Wyoming St., El Paso, Tex., LB $468,644, weapons control and radar bldg., launching pads, fdds., etc., Serial No. Eng 29-005-52-69, U. S. Eng., Box 1528, Albuquerque, N. M. Bids June 27.

Tex., Fort Sam Houston—Wright Bros. Electric Co., 405 Main St., San Antonio, Tex., LB $136,665, metal clad electric switchgear and new sub-station, Inv. No. E-41-123-52-158, U. S. Govt., c/o Contg. & Purch. Dpt., Bldg. 370, Fort Sam Houston, Tex. Bids June 27.

Va., Portsmouth — Virginia-Carolina Electric Works, 1007 E. Main St., Norfolk, Va., CA. $94,744, fire alarm sys., U. S. Naval Hospital, NOY 24455; Mechanical Eng. Co., 232 Bank St., Norfolk, Va. CA. $81,812, standby electric generators, U. S. Marine Corp. Forwarding Depot, NOY 72482, P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids June 26.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

N. J., Hackensack—Bd. Educ., 355 State St., Beech St. School, $1,350,000.

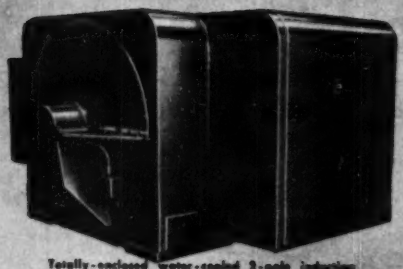
N. Y., Greensburgh—Union Carbide & Carbon Co., 30 E. 42 St., New York, Zone 17, plans by Eggers & Higgins, 100 E. 42 St., New York, Zone 17, office bldgs. on 282 acre tract, $12,000,000-$17,000,00.

Okla., Pryor—Deere & Co., 1325 3rd Ave., Moline, Ill., urea chemical and fertilizer plant, $20,000,000.

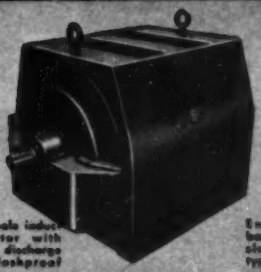
Pa., Erie—General Electric Corp., River Rd., Schenectady, N. Y., expand foundry, $10,000,000.

Low Bidders & Contracts Awarded

Va., Arlington—Morris Cafritz Co., 1404 K St. N. W., and Charles Tompkins Co., 907 16 St. N. W., both Wash., D. C. CA $60,000,000, 4,800 unit apartment near Pentagon, Ambassador, Inc., 1404 K St., N. W. and H Street Building Inc., 907 16 St. N. W., Wash., D. C. Wm. Denton, Jr., 1719 I St. N. W., Wash., D. C., archt. Work will start in 1953.



Totally-enclosed water-cooled 2-pole induction motor, 3000 hp, for contaminated atmosphere where quiet operation is essential.



Large 2-pole induction motor with top air discharge and splashproof air inlets.

Enclosed, self-lube - ventilated, sleeve bearing type motor.

WHATEVER THE CONDITIONS

In large motors it's ELLIOTT

Indoors or outdoors, hot or cool, clean or dirty, damp or dry—if a big motor is called for, Elliott is the answer. For Elliott famous "Fabri-Steel" construction permits easy and complete adaptability of the enclosure to the need. Tell us your conditions—the partial showing on this page will indicate how well we can meet them. Bulletins on request.

Elliott FABRI-STEEL MOTORS AND GENERATORS

ELLIOTT COMPANY

RIDGWAY DIVISION
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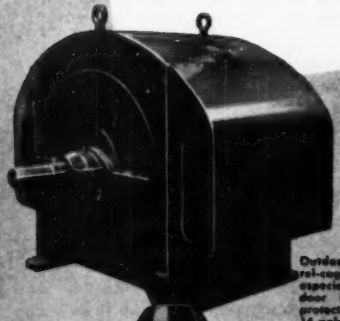
For Elliott Crocker-Wheeler industrial motors, 1-200 hp, write Elliott Company, Jeannette, Pa.

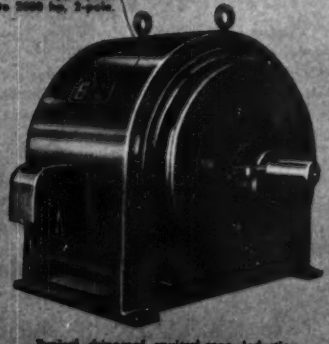


Outdoor splashproof squirrel-cage induction motor especially designed for outdoor installation without protective covering. 150 hp, 14-pole to 2000 hp, 4-pole. 234 hp to 3000 hp, 2-pole.

Wound rotor induction motor. Simple, strong, fabricated construction, sleeve or anti-friction bearings. Available in all types of enclosure.

Typical splashproof 2-pole squirrel cage induction motor (700 hp up). A long forward step in 2-pole design. Elliott welded steel construction enables widest variation in type of enclosure.

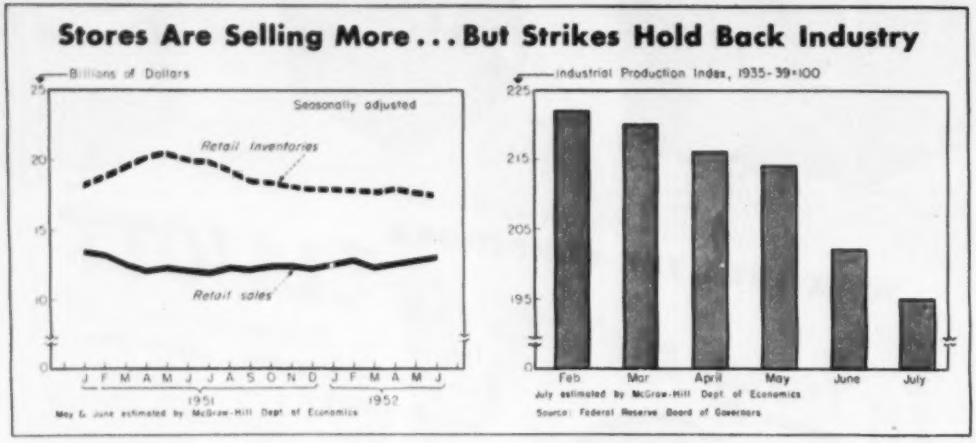
Vertical outdoor splashproof squirrel-cage induction motor. Can also be made in open dripproof or indoor splashproof with minor changes in ventilating baffles.



Typical dripproof squirrel-cage induction motor, four to 16 poles, 150 to 3000 hp.

Totally-enclosed fan-cooled motor, cooled by heat exchanger located on top of unit. Two-pole ratings 300 to 4000 hp. For lower speeds, in sizes equivalent to 50-hp, 14-pole to 2000-hp, 4-pole.

ELECTRICAL BUSINESS OUTLOOK


Stores Are Selling More . . . But Strikes Hold Back Industry
Billions of Dollars
Seasonally adjusted
Retail inventories
Retail sales
J F M A M J J A S O N D J F M A M J
1951
1952
May & June estimated by McGraw-Hill Dept of Economics
Industrial Production Index, 1935-39=100
Feb
Mar
April
May
June
July
July estimated by McGraw-Hill Dept of Economics
Source: Federal Reserve Board of Governors

Steel Strike Alters Business Picture

The steel strike has lasted long enough to change the whole business picture. Industrial production might have hit a peak this fall and dropped off toward year-end, but now output will lag in the fall months and rise sharply as we get to 1953.

In July, the industrial production index will be lower than at any time since Korea because steel mills and fabricating plants are shut down. And as the mills start up again, the after-effects will linger. It will take months to get the pipelines filled again and production up to capacity.

Time the Essential Ingredient . . . Before the strike, steel men were worried about large inventories in the hands of some steel users. Now those stocks are gone. It will take time for fabricators of basic items to get enough steel to resume production. There won't be enough for everyone right away. Then inventories of fabricated parts must be rebuilt before assembly lines can roll.

Peak activity in heavy industry—munitions, machinery, construction—was expected in the summer and fall. Now much of this activity is pushed off till late 1952 or 1953.

And meanwhile, there's been some pickup in demand for consumer durable goods. Sales of autos and home appliances picked up in May and June. (Soft goods, like shoes and textiles, seem to be selling better too.) Inventories are down. So companies that make these items are eager to get steel just at the time it's been cut off.

In this situation, it's easy to picture a pretty sharp upswing in business when the effects of the steel strike are over. Industrial production could hit 225 on the FRB index before the end of this year. And it's likely to stay in the 220-225 range well into 1953.

Of Significance to Utilities . . . There's real significance in this for utilities. Peak activity in industry is being pushed into the winter months, when residential load is heaviest. But it still won't be as high a peak as talked about when mobilization started. Munitions output will still be below targets. And other lines—like chemicals and paper—may still be lagging. In addition power load won't rise nearly so fast as power sales—a good break for the utilities, dollarwise and capacitywise.

Will the upswing in production mean a rise in prices too? Probably not much of a rise overall. Prices for metals will firm up. Steel, of course, will be higher. And some soft goods—like cotton textiles—that have sold at distressed prices will sell for more as demand improves.

Price Rises Will Come Slowly . . . But on the other hand, farm and food prices are likely to drop as the huge crops now in the ground are harvested. And even in the metal-working field—both consumer goods and capital goods—there's plenty of capacity to meet all demands, once the strike pinch eases. So most companies will think twice about boosting prices.

The overall outlook: little change in wholesale prices or in construction costs. The cost of living will probably continue to inch up as rents and services keep going higher. But a runaway rise in prices—like after Korea—just isn't in the cards.

The steel strike has cut down business inventories and stretched out the peaks in output of munitions and capital goods. That pretty well eliminates danger of a business crash during the next nine months or so. But the strike hasn't eliminated business caution about the future—and that's a powerful restraint on inflation.

You . . . are Yesterday's Children

YES, you are yesterday's children. You . . . the banker, the lawyer, the utility executive, the engineer, the purchasing agent, and so on! Yesterday, it was baseball or football. Today, it's business . . . and business is good . . . or bad . . . because of your planning and decisions.

Many utilities today are enjoying the fruits of wise planning and direction, planning which foresaw today's volume and requirements. That many of you chose Moloney equipment in preparing for this peak, is a tribute to your foresight and to our integrity in producing only the best and most dependable equipment . . . to help you give *better* service . . . at *all* times.

MEES-13

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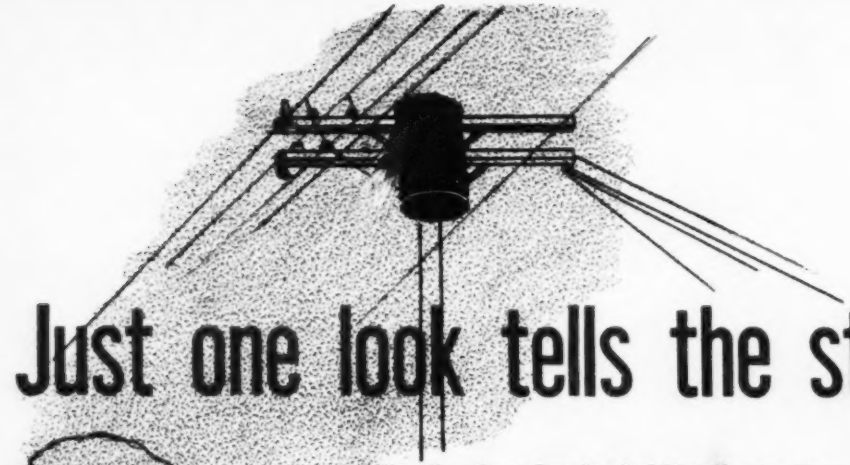

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The brilliant warning light snaps on during overloaded conditions and remains on until turned off by convenient external manual control. It's simple to operate, low in original cost with no maintenance costs involved. Detects overloads at a glance.

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